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# UNITED STATES MASTER EXPORT SECURITY LIST

*August 16, 1954*

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*Compiled and Issued by*  
Executive Secretariat  
Advisory Committee on Export Policy  
U. S. Department of Commerce

\*DOC Exempt Letter On File\*

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S E C R E T

November 1, 1954

ACEP PROGRAM DETERMINATION NO. 1102 (Revision 1) Amendment 1

To: Director  
Bureau of Foreign Commerce

Subject: U.S. Master Export Security List  
(No document)

ACEP Program Determination No. 1102 (Revision 1) is amended by adding under "Explanation of Symbols Used in Code Column", the following:

CODE

N 1 U.S. proposes inclusion of the item on I/L I at COCOM.  
N 2 U.S. proposes inclusion of the item on I/L II at COCOM.  
N 3 U.S. proposes inclusion of the item on I/L III at COCOM.

*John D. Garrett*

John D. Garrett  
Executive Secretary  
Advisory Committee on Export Policy

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August 16, 1954

ACEP PROGRAM DETERMINATION NO. 1102 (Revision 1)

TO: Director  
Bureau of Foreign Commerce

SUBJECT: U. S. Master Export Security List  
(ACEP Document No. 100)

ACEP Program Determination No. 1100 as revised establishes the general composition of the U. S. Master Export Security List and the Attributes and Standards for placing items on the List. ACEP Program Determination No. 1101 as revised compiles the detailed listing of items, assigns numbers, and indicates code symbols for certain items.

This Program Determination explains (a) the composition of the List; (b) the numbering system used; and (c) coded references showing:

1. Level of U. S. control to the Soviet bloc;
2. Destinalional area of control; and
3. Character of U.S. control to friendly countries.

*John D. Garrett*

John D. Garrett  
Executive Secretary  
Advisory Committee on Export Policy

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Part A Atomic Energy Material -- includes all items determined to be of special atomic energy significance and appearing in Annex D to I/L I. Items marked with an asterisk are controlled by the Department of Commerce.

Part B Arms, Ammunition and Implements of War -- includes the arms, ammunition and implements of war listings as established by the Office of Munitions Control of the Department of State. (Presidential Proclamation 3038.)

Part C Items which are controlled by the Department of Commerce to the Soviet bloc (except for certain additional control to communist China and North Korea which will be included in Part D of the List when issued).

Section I (Item Nos. 1001 - 1999) I/L I

Section II (Items 2001 - 2999) I/L II

Section III (Items 3001 - 3999) I/L III

Section IV (Items 4001 - 4999) U.S. unilateral control -

Part D When issued (Items 6000 - 6999).

EXPLANATION OF SYMBOLS USED IN CODE COLUMN

CODE

Q The U.S. has determined that shipments of the item to the Soviet bloc should be limited or denied. For U.S. export licensing policy covering Subgroup A destinations, see ACEP Program Determination No. 502 as amended; for friendly countries, see ACEP Program Determination No. 810 as amended.

S U.S. has determined that shipments of the items to the Soviet bloc should be under surveillance. For U.S. export licensing policy covering Subgroup A, see Program Determination No. 502 as amended.

X Not on Positive List; to be controlled to R Subgroup A only.

P On Positive List; to be controlled to R or RO in accordance with ACEP Program Determination No. 1106.

4(A) Item possesses Attribute 3, 4 or 5 and Standard 4(A).

4(B) Item meets Standard 4(B) whether or not it possesses Attribute 3, 4 or 5.

N 1 U.S. proposes inclusion of the item on I/L I at COCOM

N 2 U.S. proposes inclusion of the item on I/L II at COCOM

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August 16, 1954

ACEP PROGRAM DETERMINATION NO. 1101 (Revision 1)


To: Director  
Bureau of Foreign Commerce

Subject: U. S. Master Export Security List  
(JOC Document No. 1 and Parts; and JOC Document No. 16  
and Parts)

U. S. Master Export Security List is revised effective August 16, 1954.  
All parts except B and D have been affected.

ACEP Program Determination No. 1101 (U. S. Master Export Security List  
dated 12/22/53) and Amendments Nos. 1 to 23 inclusive are hereby  
revoked.

Amendments to this ACEP Program Determination will be issued in the  
future to cover all changes in the U. S. Master Export Security List.

  
John D. Garrett  
Executive Secretary  
Advisory Committee on Export Policy

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U. S. MASTER EXPORT SECURITY LIST

INTERNATIONAL ATOMIC ENERGY LIST (Part A)

1. Fissionable materials, including but not limited to:
  - (a) plutonium;
  - (b) uranium enriched in the isotope 233 or in the isotope 235;
  - (c) any material artificially enriched by any of the foregoing.
2. Uranium metal; thorium metal.
3. Metals, alloys, and compounds containing uranium or thorium, (excluding (i) alloys, not containing uranium, but containing less than 1.5 percent of thorium by weight; and (ii) medicinals).
4. Minerals, raw and treated, (including residues and tailings) which contain by weight at least 0.05 percent of uranium or thorium or any combination thereof, including but not limited to:
  - (a) monazite sand and other ores containing thorium;
  - (b) carnotite, pitchblende and other ores containing uranium.
- \*5. Deuterium and compounds, mixtures and solutions containing deuterium, including heavy water and heavy paraffin, in which the ratio of deuterium atoms to hydrogen atoms exceeds 1:5000 by number.
- \*6. Tetrafluoroethylene, polymerized or not; and manufactures wholly thereof.
- \*7. Trifluorochloroethylene, polymerized or not; and manufactures wholly thereof.
- \*8. Zirconium metal, alloys containing more than 50 percent zirconium by weight, and compounds, in which the ratio of hafnium content to zirconium content is less than one part to five hundred parts by weight; and manufactures wholly thereof.
- \*9. Nickel wire containing 95 percent or more nickel, 0.10 mm or less in diameter.
- \*10. Woven wire mesh composed of wire containing 95 percent or more nickel and containing 60 or more wires per linear centimeter.
- \*11. Nickel powder.
- \*12. Beryllium metal, (excluding beryllium windows for medical X-ray machines); beryl (excluding gem grade) and ores; alloys containing more than 50 percent beryllium by weight; oxides and compounds.

\* Items marked with an asterisk are controlled by the Department of Commerce.

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(Part A - Continued)

- \*13. Materials, suitable for use in refractories, composed of 97 percent or more by weight of beryllium oxide, magnesium oxide, or zirconium oxide, or composed of zirconium oxide stabilized with lime and/or magnesium oxide; and crucibles, moulds, and pouring rods composed of any any of the foregoing.
- 14. Fluorine.
- \*15. Chlorine trifluoride.
- \*16. Bromine trifluoride.
- \*17. Fluorinated hydrocarbons, as follows:
  - (a) monochlorotrifluoromethane;
  - (b) dichloromonofluoromethane;
  - (c) monochlorodifluoromethane;
  - (d) trichlorotrifluoroethane;
  - (e) dichlorotetrafluoroethane;
  - (f) trichlorodifluoroethane;
  - (g) difluoroethane;
  - (h) monochlorodifluoroethane.
- 18. Equipment specifically designed for the separation of isotopes of uranium.
- \*19. Cyclotrons, belt-type electrostatic generators (Van de Graaf machines), synchro-cyclotrons, betatrons, synchrotrons, linear accelerators and other electro-nuclear machines capable of imparting energies in excess of 1,000,000 electron volts to a nuclear particle or an ion, (except such electronuclear machines specifically designed for use in medical diagnosis and therapy); and magnets specifically designed therefor.
- \*20. Radiation detection instruments and components of the following types, designed or capable of being adapted for detection or measurement of nuclear radiations, such as alpha and beta particles, gamma radiations, neutrons and protons:
  - (a) amplifiers designed for use in nuclear measurements, including linear amplifiers, pre-amplifiers and distributed chain amplifiers;
  - (b) coincidence units for use with Geiger-Muller or proportional counters;
  - (c) electroscopes and electrometers, including dosimeters (but excluding: (i) student types; (ii) simple metal leaf electroscopes; (iii) dosimeters specially designed for use with medical X-ray equipment; and (iv) electrostatic measuring instruments);
  - (d) equipment n.e.s., for health monitoring against radiation hazards, (excluding photographic film and equipment containing it);
  - (e) Geiger-Muller counter tubes and proportional counters;
  - (f) instruments capable of measuring a current of less than one micro-microampere;
  - (g) ionization chambers;
  - (h) ionization measuring equipment suitable for the radiation survey of terrain and plant sites;

(This revision affects item 19. See ACEP PD 1101 (Rev.1) Am. 42.)

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## (Part A - Continued)

- ★ \*20. (Continued)
- (i) neutron counters containing boron, boron trifluoride, or hydrogen;
  - (j) photomultiplier tubes having photocathode sensitivity of 10 or more microamperes per lumen, and an average amplification greater than  $10^5$ ; and any electron multiplier unit activated by positive ions;
  - (k) quenching units for Geiger-Muller counters;
  - (l) resistors or resistance of not less than 1000 megohms;
  - (m) scaling units and rate meters, suitable for use in radiation detection;
  - (n) scintillation counters incorporating a photomultiplier tube;
  - (o) scintillation counter phosphors, as follows: single crystals and scintillation phosphors for use in radiation detection instruments, of volume greater than 1 cu in (16 cu cm);
  - (p) valves (tubes), electrometer, designed to handle input currents less than 1 micro-microampere.
- \*21. Fluorimeters (fluorophotometers) employing ultra-violet light as the exciting source and photomultiplier tubes (valves) or photocells as detecting and amplifying devices.
- ★ \*22. Ion separators, electromagnetic, including mass spectrographs and mass spectrometers for any purpose.
- ★ \*23. Acceleration tubes and focusing tubes of the kinds used in mass spectrometers and mass spectrographs.
- ★ \*24. Positive ion sources suitable for use in cyclotrons, mass spectrometers and the like.
- ★ \*25. Leak detecting instruments of the mass spectrometer type.
- ★ \*26. Vacuum diffusion pumps having a diameter, measured inside the barrel at the inlet jet, of 12 inches (305 mm) or greater, or capable of a pumping speed in excess of 1,500 litres per second at a pressure of less than 0.001 mm of mercury.
- \*27. Valves, with bellows seal, wholly made of or lined with aluminum, nickel, or alloy containing 60 percent or more nickel, either manually or automatically operated.
- \*28. Pirances, vacuum, designed to operate at pressures lower than 0.1 mm of mercury and at temperatures higher than 1100°C.
- \*29. Centrifuges, with a peripheral speed of 1000 feet (305 m) per second or more, wholly made of or lined with aluminium, nickel, or alloy containing 60 percent or more nickel; and centrifugal bowls made of these materials.
- \*30. Blowers and compressors, (turbo, centrifugal, and axial-flow types), wholly made of or lined with aluminium, nickel, or alloy containing 60 percent or more nickel.

(This revision affects item 20 (j). See ACEP PD No. 1101 (Rev.1) Am. 6)).

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(Part A - Continued)

- \*31. Electrolytic cells for the production of fluorine.
- \*32. Balances of a sensitivity of 0.1 microgram or better.
- \*33. Heat exchangers (tubular) and components therefor (except aluminium tubing) designed to operate at pressures of 300 psi and above and with flow contact surfaces made of any of the following materials, aluminium, nickel, titanium, zirconium, or alloys containing 60 percent or more nickel.
- \*34. Artificial graphite, in the form of blocks or rods from which a cube of 2 inches side or greater can be cut, and having a boron content of one part per million or less.
- \*35. Lithium metal, compounds, ores and concentrates.

(This revision affects item 35. See ACEP PD No. 1101 (Rev.1) Am. 17).

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LIST

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U.S. MASTER EXPORT SECURITY LIST (Part B)

U.S. MUNITIONS LIST

INTERNATIONAL MUNITIONS LIST

I. Small Arms and Machine Guns

- (a) Rifles, carbines, revolvers, pistols, machine pistols and machine guns using ammunition of caliber .22 or over except weapons using only caliber .22 rim-fire ammunition.
- (b) The following accessories and attachments for such arms: bayonets, slings, straps, gun mounts, belts, links and magazines. All components and parts for machine guns. Barrels and breech mechanisms for rifles, carbines, pistols and revolvers.

II. Artillery and Projectors

- (a) Guns, howitzers, cannon, mortars, tank destroyers, rocket launchers, military flame throwers, military smoke projectors, and recoilless rifles.
- (b) Components and parts and the following accessories and attachments: mounts and carriers.

(See also XI(f))

III. Ammunition

- (a) Ammunition of caliber .22 or over for the arms enumerated in Categories I and II hereof except caliber .22 rim-fire ammunition.
- (b) The following components, parts, accessories and attachments: cartridge cases, powder bags, bullets, jackets, cores, shells (excluding shotgun), projectiles, boosters, percussion caps, fuses, or fuzees and components thereof, primers, and other detonating devices for such ammunition.

1. Small arms and machine guns, as follows:

- (a) Rifles, carbines, revolvers, pistols, machine pistols and machine guns;
- (b) All specifically designed components and parts therefor.

(NOTE: Normally this item will not be considered to include small shipments of small arms, such as rifles, carbines or pistols of less than 6.5 mm caliber, intended only for sporting or ornamental purposes, but any and all such shipments will be reported to the Coordinating Committee.)

(See also 15(c))

2. Artillery and projectors, as follows:

- (a) Guns, howitzers, cannon mortars, tank destroyers, rocket launchers, military flame throwers, recoilless rifles;
- (b) Military smoke, gas and pyrotechnic projectors;
- (c) All specifically designed components and parts for the foregoing.

3. Ammunition, and all specifically designed components and parts thereof, for the weapons enumerated under items 1 and 2.

(NOTE: Normally this item will not be considered to include small shipments of ammunition for small arms intended only for sporting purposes, but any and all such shipments will be reported to the Coordinating Committee.)

(This revision affects I, II, and III. See ACEP PD 1101(Rev. 1) Am. 21.)

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(Part B - Continued)

U.S. MUNITIONS LIST

IV. Bombs, Torpedoes, Rockets, and Guided Missiles

- (a) Bombs, torpedoes, grenades (including smoke grenades), smoke canisters, rockets, mines, guided missiles, depth charges, fire bombs, and incendiary bombs.
- (b) Apparatus and devices for the handling, control, activation, discharge, detonation, or detection of items enumerated in paragraph (a) of this category.
- (c) Military fuel thickeners.
- (d) Components and parts including but not limited to fuses or fuze and components thereof; bomb racks and shackles; bomb shackle release units; bomb ejectors; torpedo tubes; torpedo and guided missile boosters; launching racks, projectors; control mechanisms and control systems; pistols (exploders); igniters; detonators; mine detectors; fuze or fuse arming devices; and the following items related thereto; intervalometers and components thereof; bomb lift trucks; bomb and torpedo handling trucks; trailers, hoists, and skids for handling bombs; guided missile launchers.

INTERNATIONAL MUNITIONS LIST

- \*4. Bombs, torpedoes, rockets and guided missiles, as follows:
  - (a) Bombs, torpedoes, grenades (including smoke grenades), smoke canisters, rockets, mines, guided missiles, depth charges, fire bombs, incendiary bombs; and all specifically designed components and parts therefor;
  - (b) Apparatus and devices specifically designed for the handling, control, activation, discharge, detonation or detection of items enumerated in sub-item (a); and all specifically designed components and parts therefor, including military fuel thickeners, the following:
    - (1) Aluminium soaps of fatty acids containing 12-18 carbon atoms and mixtures thereof;
    - (2) Aluminium soaps of oleic acids;
    - (3) Aluminium soaps of 2-ethylhexoic acid;
    - (4) Aluminium soaps of coconut fatty acids;
    - (5) Aluminium soaps of naphthenic acids;
    - (6) Any mixtures of the substances set out in subparagraphs (1) to (5).

(This revision affects IV.(c) and (d). See ACEP PD 1101(Rev.1) Am. 21.)

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(Rev. 11/3/55)

(Part B - Continued)

U.S. MUNITIONS LIST

V. Fire Control Equipment and Range Finders

- (a) Fire control, gun tracking and infrared and other nightsighting equipment; range, position, and height finders, and spotting instruments; aiming devices (electronic, gyroscopic, optic and acoustic); bomb sights, gun sights, and periscopes for the arms, ammunition, and implements of war enumerated herein.
- (b) Components, parts, accessories and attachments specifically designed for the articles enumerated in this category.

VI. Tanks and Ordnance Vehicles

- (a) Tanks, military type armed or armored vehicles, ammunition trailers, and amphibious vehicles (land vehicles capable of limited endurance in water), military half tracks, military type tank recovery vehicles, gun carriers, and automotive vehicles or chassis embodying all-wheel drive and equipped with one or both of the following features to meet special military requirements: adaptation features for deep water fording and sealed electrical systems.  
(See also XI (c) and (d))
- (b) Components, parts, accessories and attachments specifically designed for the tanks and ordnance vehicles enumerated in this category.

INTERNATIONAL MUNITIONS LIST

- 5. Fire control equipment and range finders, as follows:
  - (a) Fire Control, gun tracking, infrared and other night sighting equipment;
  - (b) Military range, position and height finders and spotting instruments;
  - (c) Aiming devices (electronic, gyroscopic, optic and acoustic);
  - (d) Bomb sights, gun sights and periscopes for the articles covered by this List;
  - (e) All specifically designed components and parts for the foregoing.
- 6. Tanks and ordnance vehicles, as follows:
  - (a) Tanks;
  - (b) Military type armed or armored vehicles, and vehicles fitted with mountings for arms;
  - (c) Armored railway trains;
  - (d) Military half tracks;
  - (e) Military type tank recovery vehicles;
  - (f) Gun carriers;
  - (g) Trailers specifically designed to carry ammunition;
  - (h) Amphibious vehicles;
  - (i) Specialized military mobile repair shops specially designed to service military equipment;
  - (j) All specifically designed components and parts for the foregoing.

(This revision affects V and VI. See ACEP PD 1101 (Rev.1) Am. 21.)

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(Part B - Continued)

U.S. MUNITIONS LIST

VII. Chemical and Biological Agents

- (a) Chemical or biological agents adapted for use in war to produce death or disablement in human beings or animals or to damage crops.
- (b) Equipment for the dissemination, detection, and identification of, and defense against, the items described in paragraph (a) of this category.
- (c) Components, parts, attachments, and accessories specifically designed for equipment for the dissemination, detection, identification of and defense from the chemical toxicological agents defined in the 10th Edition of the International Traffic in Arms and of biological toxicological agents.

INTERNATIONAL MUNITIONS LIST

- 7. Toxicological agents, as follows:
  - (a) Biological or chemical toxicological agents adapted for use in war to produce casualties or to damage crops.
  - (b) Equipment intended for the dissemination, detection and identification of the articles described in sub-item (a);
  - (c) Equipment intended for defense against the articles described in sub-item (a).  
(NOTE: Sub-item (c) above does not include gas masks designed for civilian use, but any such exports should be promptly reported to the Committee.)

(This revision affects VII (c). See ACEP PD 1101(Rev.1) Am. 21.)

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(Part B - Continued)

U.S. MUNITIONS LISTVIII. Propellants and Explosives

Propellants for the articles enumerated in Categories III, IV and VII hereof; military high explosives.

IX. Vessels of War and Special Naval Equipment

- (a) Warships, amphibious warfare vessels, landing craft, mine warfare vessels, patrol vessels, auxiliary vessels, service craft, floating dry docks, and experimental types of naval ships. Turrets and gun mounts, submarine storage batteries, catapults and other components, parts, attachments and accessories specifically designed for the following types of combatant vessels: battle ships, command ships, cruisers, aircraft carriers, destroyers and submarines.
- (b) Equipment for the laying, detection, detonation, and sweeping of mines. Components, parts, attachments, and accessories specifically designed for mine laying, mine detection and detonation, and mine sweeping equipment. (Continued)

INTERNATIONAL MUNITIONS LIST

## \*8. Propellants and explosives, as follows:

(a) Propellants specifically designed and manufactured for the articles enumerated in items 3, 4 and 7;

(b) Military high explosives.

(NOTE: This item will not be considered to include exports in reasonable quantities of propellants and explosives normally used for civilian or industrial purposes or made up into cartridges or charges of an exclusively civilian or industrial nature, such as: propellants for sporting purposes or shooting gallery practice, cartridges for riveting-guns, and explosive charges designed for agricultural purposes, public works, mines, quarries or oil well drilling. But any and all such shipments will be reported to the Coordinating Committee.

## 9. Vessels of war, and special naval equipment, as follows:

(a) Combatant vessels or vessels designed for offensive action;

(b) Equipment specifically designed for the laying, detection, detonation and sweeping of mines;

(This revision affects IX (a) and (b). See ACEP PD 1101 (Rev.1) Am. 21.)

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(Part B - Continued)

U.S. MUNITIONS LIST

IX. (Continued)

- (c) Submarine and torpedo nets. Components, parts, attachments and accessories specifically designed for these articles.

X. Aircraft

- (a) Aircraft and airborne equipment.
- (b) All components, parts and accessories for aircraft. This does not include ground handling and maintenance equipment and bulk materials, such as dopes, paints, oils, cable, wire, tubing, hose, aluminum sheets.

(See XI(k))  
(See XI(e))

INTERNATIONAL MUNITIONS LIST

9. (Continued)

- (c) Submarine and torpedo nets;
- (d) Components, parts, accessories and attachments for the foregoing, as follows: turrets, naval gun mounts, submarine batteries and catapults.

10. Aircraft and equipment as follows:

- (a) Aircraft (Civil and military types), and all corresponding aircraft parts;
- (b) Aircraft and airborne equipment, and parts, components, accessories and attachments therefor;
- (c) Aircraft pressure refuellers, pressure refuelling equipment, and open circuit refuellers of a pumping capacity of more than 100 gallons per minute;
- (d) Landing mats;
- (e) Pressurized breathing equipment and partial pressure suits for use in aircraft, anti "G" suits, military crash helmets, parachutes utilized for personnel, cargo and deceleration purposes, and aircraft liquid oxygen converters.

(This revision affects IX (c) and X.

See ACEP PD 1101(Rev.1) Am. 21.)

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(Part B - Continued)

U.S. MUNITIONS LIST

XI. Miscellaneous Articles

- (a) Military electronics.
  - (1) Electronics equipment specially designed for military use;
  - (2) radar of all types, including guidance systems and airborne or ground equipment therefor;
  - (3) Electronic countermeasure and jamming equipment;
  - (4) underwater sound equipment;
  - (5) military communications-electronics equipment bearing a military designation;
  - (6) electronic navigational aids specially designed for military use such as radio direction finding equipment;
  - (7) radio distance measuring systems such as Shoran, and hyperbolic grid systems, such as Raydist, Loran, Decca;  
(See also XI (j))
  - (8) components, parts, accessories and attachments specially designed for use with equipment enumerated in Category XI (a).
- (b) Aerial cameras and special purpose military cameras and specialized processing equipment therefor; military photointerpretation, stereoscopic plotting, and photogrammetry equipment.
- (c) Armor plate, armored railway trains, military steel helmets, body armor, and flak suits. Components and parts specifically designed for use in military steel helmets, body armor, and flak suits.
- (d) Specialized military mobile repair shops specially designed to service military equipment.

INTERNATIONAL MUNITIONS LIST

- 11. Electronic equipment designed for military use; and all specifically designed components and parts therefor.
- 12. Photographic equipment, as follows:
  - (a) Aerial and special purposes military cameras and specialized processing equipment therefor;
  - (b) All specifically designed components and parts for the foregoing.
- 13. Armor plate, military steel helmets, body armor and flak suits. (See also 6(c))

(See 6(i))

(This revision affects XI (a), (b) and (c). See ACEP PD 1101(Rev.1) Am. 21.)

(Part B - Continued)

XI. Miscellaneous Articles (Cont'd)

(e) Pressurized breathing equipment and partial pressure suits for use in aircraft, anti "G" suits, military crash helmets, aircraft liquid oxygen converters, and complete parachutes utilized for personnel, cargo, or deceleration purposes. Components and parts specifically designed for pressurized breathing equipment, partial pressure suits, anti "G" suits, aircraft crash helmets, and liquid oxygen converters.

(See 10(e))

(f) Military pyrotechnics including projectors therefor.

(See 2(b))

(g) Specialized military training equipment. Components, parts, attachments and accessories for specialized military training equipment as defined in 10th Edition of International Traffic in Arms.

14. Specialized military training equipment; and all specifically designed components and parts therefor.

(h) Tear gas and equipment for dissemination thereof.

15. Miscellaneous equipment and materials, as follows:  
(a) Tear gas and equipment for the dissemination thereof;  
(b) Self-contained diving and under-water swimming apparatus, and articles exclusively designed for use therewith;  
(c) Bayonets;  
(d) Fire arms silencers (mufflers);  
(e) Power-controlled search lights designed for military use.

(See I)

(This revision affects XI(e), (g) and (h). See ACEP PD 1101(Rev.1) Am. 21.)

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(Part B - Continued)

U.S. MUNITIONS LIST

INTERNATIONAL MUNITIONS LIST

XI. Miscellaneous Articles (Cont'd.)

(i) Helium gas.

-

(j) Cryptographic devices (encoding and decoding).

(See 11)

(k) Landing mats.

(See 10(d))

XII. Classified Material

-

All material not enumerated herein which is classified from the standpoint of military security.

XIII. Technical Data

-

Technical data relating to the articles here designated as arms, ammunition, and implements of war.

16. Specialized machinery, equipment and gear specially designed for the examination, manufacture, testing and checking of the arms, ammunition, appliances and machines referred to in this List.

\*Items marked with an asterisk are controlled by the Department of Commerce, with certain exceptions under item 4, which when used for military purposes are licensed by the Department of State.

(This revision affects XIII and "Note". See ACEP PD 1101 (Rev.1) Am. 21.)

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U. S. MASTER EXPORT SECURITY LIST

ADMINISTRATIVE PRINCIPLES  
(Applicable to Part C)

1. The description of any item on the Lists includes that item in either new or second-hand condition.
2. When the description of any item on the Lists contains no qualifications or specifications, it is regarded as including all varieties of that item. Category and sub-category captions are only for convenience in reference and do not affect the interpretation of item definitions.
3. Any item (including plants) containing one or more embargoed components should generally be treated as though it were on the embargo list when the embargo component or components are a principal element of the item in value or quantity and can be feasibly removed or used for other purposes.
4. The object of the embargo and quantitative controls should not be defeated by the export of component parts. Each country will take such action as it can to achieve this aim, and will continue to seek a workable definition for parts which could be used by all the participating countries.
5. So far as possible, the object of strategic controls should be maintained by restrictions on the export of technical assistance, design data and manufacturing technique.

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177 items on 12/I

178 ~~178~~  
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177  
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CATEGORY  
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U. S. MASTER EXPORT SECURITY LIST

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(Part C Section I)

*34 items* → \*METALWORKING MACHINERY (001-099 series)



Boring and Drilling Machines

- 1001. Vertical boring and turning mills, as follows:
  - (a) all types with table diameter exceeding 96" (2.5 m);
  - (b) automatic types (automatic cycle).
- 1002. Jig boring machines.
- 1006. Deep hole drilling machines in which the coolant passes through the drill; and hollow drills for such machines.

Grinding Machines

- 1016. Internal grinding machines:
  - (a) incorporating high frequency (over 60 cycle) spindles; and high frequency spindles and spindle assemblies;
  - (b) other types incorporating spindles with speeds in excess of 60,000 rpm and spindle assemblies.
- 1017. Surface grinding machines, as follows:
  - (a) multi-spindle, rotary table or work holder;
  - (b) horizontal spindle, reciprocating table over 24" (61 cm) wide;
  - (c) multi-spindle disc.
- 1019. Contour profile grinders.
- 1021. Jig grinders.
- 1022. Lap radial grinders (automatic oscillating types) i.e., machines for grinding concave or convex surfaces such as those in ball bearing races.
- 1023. Roll grinding machines (machines fitted with, or capable of being fitted with, cambering device only).
- 1025. Thread grinding machines.
- 1027. Grinding machines for broaching tools, auto cycle, auto sizing.

Lathes

- 1039. Engine and center lathes over 18" (45 cm) center height and over 18 feet (5.5 m) between centers.
- 1040. Horizontal turret lathes of bar capacity 4" (10 cm) and over or swing-over-bed of 24" (61 cm) or more.

(This revision affects item 1016. See ACEP PD No. 1101 (Rev. 1) Am. 35.)

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METALWORKING MACHINERY (001-099 series) - Continued

Lathes - Continued

- 1041 Automatic lathes, multi-spindle bar or chucking.
- 1042 Right angle ("T") lathes (in which the bed is at right angles to the spindle).
- 1043 Combination tube boring and turning lathes.
- 1044 Combination lathe, drilling, and milling machines, specially designed for mobile military workshops or for naval craft.

Milling and Planing Machines

- 1050 Thread milling machines, 6" (15 cm) work diameter at the thread and over (except gun jump screw lathes covered by item 1086j).
- 1051 Spar millers.
- 1052 Planing machines, planer milling machines, and combination planer and planer milling machines, with capacity for work pieces 72" (1.83 m) wide and over or 20' (6.1 m) long and over.
- 1053 Armour plate planers.

Attachments and Accessories

- 1065 Military-type jigs, fixtures and plate metal working accessories (except machines).

Forming Machines

- 1070 Forging hammers, as follows:
  - (a) having a falling weight exceeding 6 tons (English or metric);
  - (b) steam, air or mechanical hammers of rated size exceeding 5 tons (English or metric).
- 1072 Presses, mechanical or hydraulic, with rated pressures of over 1000 tons.  
(Note: The "tons" mentioned are those commonly used in the metal-forming industry of the exporting country.)
- 1073 Machinery for drawing and/or tempering wire .015" (.381 mm) in diameter or less or tubing .026" (.660 mm) in diameter or less.
- 1075 Spinning lathes, except those with a spindle drive motor of 10 hp or less.

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METALWORKING MACHINERY (001-099 series)-Continued

Other Metal-Working Machinery

- 1080 Machines and equipment specially designed for making or measuring gas turbine blades, including but not limited to the following:
  - (a) blade belt grinding machines;
  - (b) blade edge radiusing machines;
  - (c) blade polishing machines;
  - (d) blade aerofoil milling and/or grinding machines;
  - (e) blade fillet radiusing and/or platform forming machines or equipment;
  - (f) blade root milling machines;
  - (g) blade blank preforming machines;
  - (h) blade rolling machines;
  - (i) blade aerofoil shaping machines;
  - (j) blade root grinding machines;
  - (k) blade aerofoil scribing equipment;
  - (l) blade aerofoil and/or root automatic measuring equipment.
  
- 1081 Special machinery for the working or forming of aircraft sheet, plate or extrusion.
  
- 1084 Equipment designed for removing surplus stock from workpieces of metal or other materials:
  - (a) by the discharge of electric sparks from a shaped electrode;
  - (b) by applying ultrasonic vibrations;
  - (c) by electrolytic means in combination with abrasive action.
  
- 1086 All machines and equipment specially designed for manufacturing armaments (i.e., arms, munitions, and implements of war). (For illustrations, see Interpretative Note No. 1).
  
- 1087 External surface broaching machines; and external surface broaching tools.
  
- 1088 Gear making machinery: All machinery designed for the manufacture and/or finishing of machine cut gears (except hobbing machines of 48" (1.22 m) maximum work diameter or less, and gear grinding machines of a non-generating type).
  
- 1089 Honing machines with multiple work stations.
  
- 1090 Profiling and duplicating machinery, as follows:
  - (a) die-sinking machines;
  - (b) profiling machines for marine and aircraft propeller blades (planing, shaping, milling or grinding);
  - (c) profiling and duplicating milling machines (except propeller types covered by (b));
  - (d) profiling machines, n.e.s.;
  - (e) attachments for center lathes, capstan lathes, milling machines and vertical borers, which make them capable of carrying out profiling and duplicating (except taper turning attachments).

\*(For additional embargo items, see Part A.)

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16 → \*CHEMICAL AND PETROLEUM EQUIPMENT (101-199 series)  
// → A. CHEMICAL EQUIPMENT (101-149 subseries)

Specialized Processing Equipment

- ✓ 1101. Equipment specially designed for the production of nitrogen tetroxide and/or its conversion to nitric acid of 98 percent or higher concentration.
- 1103 Deleted.
- ✓ 1106. Centrifugal counter-current solvent extractors.
- ✓ 1110. Gas-liquefying equipment, as follows:
  - (a) liquid oxygen or liquid hydrogen producing plants specially designed to be mobile or transportable in one or more units;
  - (b) liquid fluorine producing equipment;
  - (c) equipment for the separation of helium from methane.
- ✓ 1112. Equipment for the production of hydrogen and deuterium oxide, as follow:
  - (a) complete installations capable of producing hydrogen by the electrolytic process at a rate of 30,000 cu ft (850 cu m) or more per hour;
  - (b) equipment for production or concentration of deuterium oxide;
  - (c) electrolytic cells for the production of hydrogen at a rate of 60 cu ft (1.7 cu m) or more per hour.
- ✓ 1118. Equipment for the production of military explosives, as follows:
  - (a) complete installations;
  - (b) specialized components (see list of key specialized components in Interpretative Note No. 4);
  - (c) nitrators: batch types with a capacity of 125 Imperial gallons (570 litres) or more, and continuous types.
- ✓ 1125. Plant for the production of titanium metal (excluding separate plant for the production of titanium tetrachloride), as follows:
  - (a) complete installations;
  - (b) specialized components.

Compressors, Pumps and Valves

- ✓ 1130. Compressors, n.e.s., of 300 hp or more capable of delivering air, gases or vapours at pressures exceeding 450 psi (32 kg per sq cm).

(This revision affects item 1118. See ACEP PD No. 1101 (Rev. 1) Am. 12.)

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CHEMICAL & PETROLEUM EQUIPMENT (101-199 series) - Continued

A. CHEMICAL EQUIPMENT (101-149 subseries) - Continued

Compressors, Pumps and Valves - continued

- ✓ 1131. 2129 Pumps (except vacuum pumps) delivering liquids separately or in combination with solids and/or gases and having any of the following characteristics:
- (a) designed to move molten metals by electromagnetic forces;
  - (b) having all flow contact surfaces made of any of the following materials:
    - (1) 90% or more tantalum, titanium or zirconium, either separately or combined;
    - (2) 50% or more cobalt or molybdenum, either separately or combined;
    - (3) 10% or more silicon (as metal alloy);
    - (4) polytetrafluoroethylene; polytrifluorochloroethylene;
  - (c) designed to produce pressures of 450 psi (32 kg per sq cm) or more and having an inlet connection greater than 3 inches (75 mm) internal pipe size.
- ✓ 1132. 3132 Vacuum pumps, all types, designed to produce a vacuum of 0.01 mm of mercury pressure absolute or less (except (i) those covered by the International Atomic Energy List, and (ii) mechanical types having a capacity of less than 60 litres free air per minute); and specially designed parts.
- ✓ 1133. 2133 Pipe valves and cocks having all flow contact surfaces made of any of the following materials:
- (a) 90% or more tantalum, titanium or zirconium, either separately or combined;
  - (b) 50% or more cobalt or molybdenum, either separately or combined;
  - (c) 10% or more silicon (as metal alloy);
  - (d) polytetrafluoroethylene; polytrifluorochloroethylene.
- (Note: The following types of valves are excluded:
- (1) check, non-return and float valves;
  - (2) pressure relief valves designed for working pressures of less than 450 psi (32 kg per sq cm);
  - (3) valves and cocks specially designed for milking machines and for electrical household refrigerators and home freezers.

Other Chemical Equipment

- ✓ 1142. 3142 Pipe and tubing made of or lined with polytetrafluoroethylene or polytrifluorochloroethylene.

(This revision affects item 1132. See ACEP PD No. 1101 (Rev. 1) Am. 17).

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CHEMICAL & PETROLEUM EQUIPMENT (101-199 series) - continued

5 → B. PETROLEUM EQUIPMENT (150-199 subseries)  
(See also chemical equipment for items with chemical and petroleum uses.)

1150. Oil well drilling and exploration equipment.

(Note: Interpreted to include the following:

- (a) casinghead and Christmas tree assemblies;
- (b) cementing equipment;
- (c) coring equipment;
- (d) gun perforating equipment;
- (e) photo-clinometers;
- (f) power pumping units (mud and sludge) and bottom hole pumps;
- (g) blow out preventers;
- (h) drill bits (rock bits);
- (i) draw works and rotary tables;
- (j) well logging instruments and equipment;
- (k) drill collars, tool joints, Kelly's and Kelly substitutes;
- (l) crown blocks, travelling blocks for oil derricks;
- (m) rotary vibrator hose and rotary drilling hose, high pressure (with test pressure 3,000 psi (210 kg per sq cm) and over).)

1151 Equipment for the production of lubricants (petroleum based or synthetic), as follows (and complete plants including any of these units):

- (a) solvent processing units (including phenol, duosol, furfural and nitrobenzene solvent extraction and propane de-asphalting units);
- (b) dewaxing units (including centrifugal and solvent dewaxing units, such as methylethyl ketone and propane units);
- (c) filtration units (including percolation filtration, contact filtration, and filtrol fractionation units);
- (d) fractionating, rectifying, and dephlegmating columns, and parts therefor;
- (e) hydrogenation equipment (complete installations and specialized components) designed to operate at pressures of 360 psi (25 kg per sq cm) or over (except equipment specially designed for the production of ammonia or methanol).

1152. Mineral oil and natural gas treatment equipment, as follows:

- (a) units for treating, separating and stabilizing, and natural gas extraction;
- (b) complete plants including any of the above units;
- (c) items of equipment specially designed therefor (including, but not limited to, the following: stabilizing, absorption and stripping vessels; separators; condensers).

(This revision affects item 1150(m). See ACEP PD No. 1101 (Rev. 1) Am. 17).

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CHEMICAL & PETROLEUM EQUIPMENT (101-199 Series) - continued

B. PETROLEUM EQUIPMENT (150-199 subseries) - continued  
(See also chemical equipment for items  
with chemical and petroleum uses.)

1153. Fuel production equipment, as follows:
- (a) processing units of types suitable for the production of components of aviation fuels for reciprocating engines (including alkylation, thermal and catalytic cracking and reforming units, isomerization, aromatization, dehydrogenation, hydrogenation and polymerization units);
  - (b) complete plants including any of these units;
1154. Welded or seamless steel drill pipe, conforming with API specifications for oil country tubular products.  
(See also items 2154 and 3154.)
- 2154  
3154

(This revision affects item 1154. See ACEP PD No. 1101 (Rev.1) Am. 4.)

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4 → \*ELECTRICAL AND POWER-GENERATING EQUIPMENT (201-299 series)  
↓

1210 Searchlight control units.

(B) 1255 Diesel engines, as follows:

- (a) 1500 hp and over with rotary speed of 600 rpm or over (except those incorporated in generator sets);
- (b) 50 hp and over whose non-magnetic content exceeds 50 percent of their total weight

(I) 1260 Electric motors over 1,000 hp, reversing type, liquid cooled and totally enclosed.

(A) 1266 Rotating electrical machinery, as follows:

- (a) electric generators, turbo-generators, turbines designed for turbo-generators and synchronous condensers of 60,000 KW and over; and specially designed parts;
- (b) electric motors of 12,500 hp and over; and automatic and semi-automatic equipment for starting, stopping, reversing and speed control for these motors.

(See also items 2265, 2266 and 3265.)

*(Redefinition of (a), reducing the cut-off to 30,000 KW, is suggested.)*

\* (For additional embargo items, see Part A.)

(This revision affects item 1266. See ACEP PD No. 1101 (Rev. 1) Am. 13.)

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(Rev. 11/28/56)12 → \*GENERAL INDUSTRIAL EQUIPMENT (301-399 series)Metallurgical, Mill, and Foundry Equipment

1305. Metal rolling mills, all types; and controls therefor.

Construction and Conveying Machinery

1321. Tractors, 4-wheel drive, 100 brake hp or over.

1322. Soil compacting equipment, as follows:

- (a) soil compactors with pneumatic tired wheels, vibrating type, of 30,000 lbs. or (13 metric tons) net vehicle weight or over;
- (b) pneumatic tire casings for such soil compactors (whether or not mounted on the vehicle) of 16.00 x 21 size or over, and rated 36 ply or over.

1325. Excavating and moving equipment, as follows, when specially designed for airborne transport:

- (a) excavators;
- (b) power shovels;
- (c) cranes.

Equipment for Other Specific Industries

1350. Carbon black furnaces, controlled atmosphere types (intermittent or continuous).

1353. Cable-making machinery specially designed for making multipair electric cables for telecommunications purposes, as follows:

- (a) machinery other than that covered by item 1354 for applying insulating material to conductors;
- (b) machinery for laying conductors together and/or for applying and insulating, separating, binding, or identifying material thereto;
- (c) machinery for laying up conductors, pairs, quads, etc., together to form the complete cable core or part thereof.

1354. Cable-making machinery specially designed for making coaxial cable, as follows:

- (a) machines for applying insulating separators to the inner conductor of air-spaced coaxial electric cables;
- (b) machines for applying metal strip or sheet to form the outer conductor of coaxial electric cables;
- (c) machines for forming, stranding, or assembling coaxial cable, with or without conductors other than coaxial tubes.
- (d) automatic equipment for controlling the diameter or the eccentricity of extruded dielectric on wires and cables.

1355. Radio-valve manufacturing machinery.

(This revision affects item 1354(d). See ACEP PD 1101 (Rev.1) Am. 35.)

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\*GENERAL INDUSTRIAL EQUIPMENT (301-399 series) - Continued

Other General Industrial Equipment

1380. Compressors and blowers as follows:

- (a)(1) turbo-compressors or blowers capable of operating with a mainstream internal air flow exceeding a Mach No. of 0.9;
- (2) turbo-compressors or blowers of axial flow type with a compression ratio of 2:1 or more and capable of operating with a mainstream internal air flow exceeding a Mach No. 0.7;
- (b) compressors or blowers capable of an overall compression ratio of 2:1 or more coupled with a capacity of over 124,000 cu. ft. (3,500 cu m) per minute, or capable of an overall compression ratio of over 3:1 coupled with a capacity of over 35,300 cu ft (1,000 cu m) per minute;
- (c) compressors or blowers capable of handling a mass flow of over 2,500 lbs. (1,134 kg) per minute and designed for operating with intake above atmospheric pressure.

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GENERAL INDUSTRIAL EQUIPMENT (301-399 series) - continued

Other General Industrial Equipment - continued

- 1385. Diamonds suitable for industrial use, including splints and borts.  
(Note: Interpreted to include industrial diamonds, dust and powder.  
Also interpreted to include rough cuttable diamonds suitable either  
for gem stones or industrial diamonds.)
- 1386. Diamond wire drawing dies, diamond dressers, diamond boring and  
turning tools, and diamond core drill bits.
- 1387. Diamond grinding wheels, sticks, hones and laps.

\* (For additional embargo items, see Part A.)

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14 → \*TRANSPORTATION EQUIPMENT (401-499 series)

14  
↓  
Vessels

1401 Floating docks.

1405 Icebreakers of 2000 shaft hp and over, and similar vessels principally  
2405 designed for breaking ice having any of the following:

- (a) bow propeller;
- (b) special hull shape;
- (c) propulsion plant permitting quick reversing and development of maximum power at all speeds;
- (d) stern saddle arrangements for towing operations;
- (e) excessive electrical supplies and pumping facilities.

1410 Tankers; tank barges; whaling factories.

1415 Warships (whether or not converted to non-military use and regardless of current state of repair or operating condition); and hulls, or parts of hulls, for such ships.

1416 Fishing vessels and hulls therefor, having any of the following  
2416 specifications:  
3416

- (a) wood or other non-magnetic hull of 60 feet (18 m) or more in length between perpendiculars unless built before 1939, in which case 100 feet (30 m) or more in length; (except the following vessels when their speed is not more than 10 knots and their electric generating capacity is under 35 KW:
  - (1) Bonito and tuna vessels under 130 feet (40 m) in length between perpendiculars, either fitted with sponson platforms for line fishing or of the long line type;
  - (2) seal fishing vessels under 130 feet (40 m) in length;
  - (3) fishing cutters (Scandinavian type) under 100 feet (30 m) in length;
- (b) 200' (60 m) or more in length between perpendiculars;
- (c) maximum speed in deep load condition of 12½ knots or more;
- (d) total round trip range at design speed above 7000 miles, in fishing condition;
- (e) incorporating any of the following special features:
  - (1) deck or hull strengthening for weapons or special construction to accommodate or carry military equipment;
  - (2) hull design suitable for direct beachings;
  - (3) bow or stern doors;
  - (4) any arrangements for demagnetizing or the provision of non-magnetic characteristics;
  - (5) electrical generating capacity in abnormal excess of the needs for the vessel as a fishing vessel;
  - (6) strengthening against ice beyond the requirements of Lloyd's or other Free World classification societies;
- (f) incorporating any Munitions List item or any of the following embargo items: 1210, 1430, 1435, 1485 (except the types specified in Interpretative Note No. 5) 1502, 1509, 1510.

(This revision affects item 1416(f). See ACEP PD No. 1101 (Rev. 1) Am. 17.)

\*TRANSPORTATION EQUIPMENT (401-499 series) - continued

Vessels - continued

- 1417 Other vessels, as follows:
- (a) whale catchers;
  - (b) ships designed to accommodate 200 or more passengers;
  - (c) coasters, i.e., sea-going cargo or passenger ships under 1,000 gross registered tons;
  - (d) ships with any of the following characteristics:
    - (1) bow and/or stern unloading arrangements including doors, ramps, and train or car-ferry layout;
    - (2) special design or facilities to permit launching or landing of aircraft;
    - (3) lifting gear over 50 tons capacity;
    - (4) deck or hull strengthening for weapons or special construction to accommodate or carry military equipment on or under deck;
    - (5) any arrangements for demagnetizing or the provision of non-magnetic characteristics;
    - (6) electrical generating capacity and/or fuel capacity in abnormal excess of the commercial needs of the vessel;
    - (7) strengthening against ice beyond the requirements of Lloyd's or other Free World classification societies;
    - (8) incorporating any Munitions List item or any of the following embargo items: 1210, 1430, 1435, 1485 (except the types specified in Interpretative Note No. 5) 1502, 1509, 1510.

Marine Equipment (except motors)

- 1425 Batteries (submarine).
- { 1430 Cable, as follows:  
3430
- (a) electric conducting cable, suitable for sweeping magnetic mines or for harbour defense;
  - (b) wire rope, strand and cord, made of phosphor bronze or stainless steel suitable for aircraft.
- 1435 Minesweeping equipment (magnetic and acoustic).
- { 1441 Marine steam boilers having a capacity to generate 11 lbs. of steam per  
3441 sq ft (54 kgs per sq m) or more of tubular heating surface per hour at pressures of 450 psi (32 kgs per sq cm) or more, and feed water heaters for such boilers.

Automotive Equipment (except tires)

- { 1450 Automotive vehicles or chassis, including specially designed parts  
2450 therefor, having both front and rear drives and possessing any of the following characteristics:
- (a) maximum approved load capacity in excess of 1200 lbs. (550 kgs) and engine capacity in excess of 3000 cc;
  - (b) water-proofed for operation when engine submerged in water;
  - (c) radio suppression including fully screened high tension leads.

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TRANSPORTATION EQUIPMENT (401-499 series) - Continued

Railway Equipment

- { 1471 • Turbine locomotives, as follows:  
3470 (a) general service (line) switching and industrial locomotives of a gauge greater than 4 ft. 8 in. (1.42 m) or with an individual axle load greater than 12 metric tons;  
(b) parts specially designed for the above locomotives.
- { 1481 • Centralized traffic control (CTC) system of railway signalling  
3481 controlled by code impulses; and parts specially designed therefor.

Other Transportation Equipment

- 1485 • Compasses and gyroscopic equipment, as follows:  
(a) gyro compasses;  
(b) transmitting magnetic compasses;  
(c) gyro-magnetic compasses;  
(d) repeaters for these compasses;  
(e) gyroscopic stabilizers;  
(f) gyroscopic steering controls.

\* (For additional embargo items, see Part A.)

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44 → \*ELECTRONICS AND PRECISION INSTRUMENTS (501-599 series)  
 (Note: Broadcast and television receivers of the domestic type are expressly exempt from control.)

Radio, Radar, and Other Telecommunication Apparatus

- 1501. Communication equipment specially designed for use in aircraft or for communicating with aircraft; and specialized parts therefor.
- 1502. Communication equipment of a kind using infra-red radiation or ultra-sonic waves; and specialized parts therefor.
- 1507. "Jamming" apparatus (i.e. apparatus specially designed to jam or otherwise interfere with radio reception); and specialized parts therefor.
- 1509. Location apparatus as follows:
  - (a) apparatus of a kind used for detecting objects or for determining the relative direction, position, or motion of objects by means of the constant velocity or rectilinear propagation characteristics of electro-magnetic waves having frequencies less than  $4 \times 10^{14}$  cycles per second (0.75 microns) (except radio direction finding equipment of a kind used at frequencies not greater than 3 megacycles per second);
  - (b) specialized parts and accessories of such apparatus;
  - (c) specialized equipment for testing or calibrating such apparatus.
- 1510. Location apparatus, under-water: apparatus for detecting or locating objects under water by magnetic or acoustic or ultrasonic methods (except marine depth sounders of a kind used solely for measuring the depth of water or the distance of submerged objects vertically below the apparatus); and specialized components of such apparatus.
- 1514. Pulse modulators capable of providing electric impulses of peak power exceeding 10 KW; and pulse-transformers and pulse-forming equipment being specialized parts of such modulators.
- 1516. Radio receivers, panoramic (being receivers which search automatically a part of the radio-frequency spectrum and indicate visibly the signals received); and specialized parts therefor.
- 1517. Radio transmitters and components as follows:
  - (a) transmitters or transmitter amplifiers designed to operate:
    - (1) at output carrier frequency between 108 and 156 mc/s, and/or
    - (2) with output carrier frequency above 216 mc/s;
  - (b) transmitters, or transmitter amplifiers, designed to operate with output carrier frequency higher than 30 mc/s and designed to provide any of the following features:
    - (1) any system of pulse modulation other than amplitude-modulated television, frequency-modulated television, or phase-modulated television;
    - (2) two or more independent modulation channels on one radio frequency carrier; (continued)

(This revision affects item 1517. See ACEP PD No. 1101 (Rev. 1) Am. 17.)

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CONFIDENTIAL\*ELECTRONICS AND PRECISION INSTRUMENTS (501-599 series) - cont'dRadio, Radar, and Other Telecommunication Apparatus - continued

1517. Radio transmitters and components as follows: (Continued)

- (3) simultaneous output at more than one radio frequency carrier frequency;
  - (4) special facilities to give continuous operation (on any carrier frequency outside the internationally agreed broadcasting bands) in inter-connection with land-line telephone circuits or switchboards, e.g. voice-operated gain-adjusting circuits, automatic volume compression and expansion circuits, and automatic monitoring;
  - (5) rapid selection, by means of preadjusted tuning controls, between four or more radio frequency carrier frequencies in equipment designed for operation in commercial moving vehicles; or between two or more radio frequency carrier frequencies in equipment not so designed;
  - (6) modulation bandwidth greater than 4 kilocycles at any carrier frequency within any of the bands 30 to 41 mc/s, 68 to 87.5 mc/s, 100 to 108 mc/s;
  - (7) carrier output power, for static and transportable sets, greater than 100 watts, and for mobile sets greater than 25 watts, at any carrier frequency within any of the bands 30 to 41 mc/s, 68 to 87.5 mc/s, 100 to 108 mc/s;
  - (8) special facilities for uses other than sound or vision broadcasting, mobile communications, fixed headquarters station for mobile services, or a mobile sound or vision link to a main broadcast stations;
  - (c) mobile communications equipment operating at carrier frequencies above 30 mc/s, or headquarter stations therefor, other than those types designed for and already in use in Western countries for normal commercial civilian purposes;
  - (d) transmitters, or transmitter drive oscillators, designed to provide a multiplicity of alternative output carrier frequencies controlled by a lesser number of piezo-electric crystals.
- (Note: This covers equipment working below 30 mc/s as well as above. Sets incorporating crystal-economizing circuits are mainly required for military purposes (e.g. airborne and tank communications). The output frequency of the drive oscillator is not necessarily the same as that of the complete transmitter, but is often a sub-multiple of it, which is the reason for omitting a lower frequency limit.)
- (e) components and sub-assemblies, including modulators and modulation amplifiers, specially designed for use in transmitters covered by sub-items (a), (b), (c) or (d) above.

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ELECTRONICS AND PRECISION INSTRUMENTS (501-599 series)-Cont'd.

Radio, Radar, and Other Telecommunication Apparatus - cont'd.

1518. Telecontrol equipment suitable for controlling pilotless aircraft and guided weapons.
1519. Telegraph equipment, as follows:
- (a) equipment (machines), mechanical, electro-mechanical, or electronic, used to translate the information contained in written or printed text into electrical waveforms suitable for transmission over communication circuits at any speed greater than 200 words per minute or 150 bauds, whichever is the less;
  - (b) equipment designed to accept such electrical waveforms and display the information from them in visible form;
  - (c) specialized component parts and accessories for such equipment.
1520. Radio relay communications equipment and specialized components and subassemblies therefor.

Supplementary Equipment and Components for Radio, Radar and Communications Apparatus

1521. Amplifiers, as follows:
- (a) designed to operate at frequencies in excess of 100 m/cs;
  - (b) tuned amplifiers having a bandwidth (defined as the band of frequencies over which the power amplification does not drop to less than one-half of its maximum value) which exceeds 5 m/cs or 10% of the mean frequency, whichever is less. (The mean frequency is defined as the arithmetic mean between the frequencies at which the power amplification is one-half of its maximum value.);
  - (c) untuned amplifiers having a bandwidth, as defined in sub-item (b) above, which exceeds 5 m/cs per second;
  - (d) DC amplifiers having a noise level (referred to the input circuit) of 10-16 watts or less and/or a zero drift of 1 hour corresponding to a change in input power of 10-16 watts or less;
  - (e) capable of a total power output in excess of 500 watts at any frequency or frequencies between 15 k/cs per second and 200 k/cs per second.
1523. Line communications transmission equipment as follows:
- (a) terminal and intermediate repeater or amplifier equipment designed to deliver, carry or receive frequencies higher than 10 kcs into, or in, a line communications system;
  - (b) multi-channel telegraph terminal transmitting and receiving equipment;
  - (c) specialized components, accessories and subassemblies for the above equipment.

(This revision affects item 1523. See ACEP PD 1101 (Rev.1) Am. 16).

ELECTRONICS AND PRECISION INSTRUMENTS (501-599 series)-Continued

Supplementary Equipment and Components for Radio, Radar  
and Communications Apparatus - continued

1524. Communications submarine cable of all types.
1525. Coaxial type cables, single or multi-tube, as follows:
- (a) having an attenuation not exceeding 10 decibels per 100 feet (30.5 m) and a standing wave ratio of 2 or less, when terminated in their characteristic impedance at 3000 megacycles;
  - (b) all air-spaced types;
  - (c) all types with polytetrafluoroethylene or polytrifluoro-chloroethylene dielectric.
1526. Communications cable of any type containing more than one pair of conductors and containing any conductor (single or stranded) exceeding 0.9 mm in diameter.
- (NOTE: In view of the recent technological developments in this field, Member Governments agree not to export to the Soviet Bloc cables containing more than one pair of conductors of 0.9 mm or less in diameter when the exporting Government considers that these are manufactured as long distance communications carrier-frequency cables.)

(This revision affects items 1524, 1525, and 1526. See ACEP PD 1101 (Rev. 1) Amendment 16).

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\*ELECTRONICS AND PRECISION INSTRUMENTS (501-599 series) - continued

Supplementary Equipment and Components for Radio, Radar  
and Communications Apparatus - continued

- 1529 Measuring instruments, as follows:
- (a) electrical instruments, as follows:
    - (1) apparatus for measuring impedance, admittance, capacitance or inductance at frequencies in excess of 100 megacycles per second;
    - (2) variable attenuators giving readings, accurate to less than plus or minus 5 percent of the indicated value expressed in decibels, at frequencies of 1 megacycle per second or above;
    - (3) equipment for measuring permittivity, and/or power factor of dielectrics at frequencies of 1 megacycle per second or above;
    - (4) radio-frequency field strength measuring equipment;
    - (5) frequency measuring equipment with an accuracy better than plus or minus 0.01 percent at frequencies over 30 kilocycles per second;
    - (6) electronic stabilized power supplies delivering a DC output voltage which:
      - (i) varies by less than 1 percent of any input voltage variation within plus or minus 20 percent of the nominal, and/or
      - (ii) varies by less than 0.1 percent of the maximum rated voltage between no load and maximum rated load;
    - (7) those operating at frequencies exceeding 300 megacycles per second;
  - (b) resistors, inductors, or capacitors, fixed or variable, with a rated accuracy better than plus or minus 1 percent at 1 megacycle per second or any higher frequency;
  - (c) apparatus for automatically sorting electronic components in respect of their electrical characteristics.
- 1533 Radio spectrum analyzers (being apparatus capable of indicating the single-frequency components of multi-frequency oscillations); and specialized parts of such analyzers.
- 1537 Special tuned circuits, as follows:
- (a) electromagnetic waveguides, resonant circuits, and radiators of a kind used at frequencies exceeding 600 megacycles per second.
  - (b) articles or equipment incorporating, or designed to be connected to or to be incorporated in, any such waveguide, circuit, or radiator.

Electronic Valves (Tubes)

- 1541 Cathode-ray tubes, as follows:
- (a) with screen afterglow longer than 1/2 second;
  - (b) with writing speeds of more than 3,000 kilometers per second;
  - (c) with 2 or more electron guns.
- 1544 Crystal diodes specially designed for use at frequencies of 250 or more megacycles per second; and specialized parts therefor.

(This revision affects item 1529(a)(1) & (2). See ACEP PD No.1101(Rev.1)Am.38.)

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\*ELECTRONICS AND PRECISION INSTRUMENTS (501-599 series)-continued

Electronic Valves (Tubes) - continued

- 1545 Transistors, with any number of electrodes, regardless of operating characteristics; and specialized parts therefor.  
(Note: A transistor is an electronic device incorporating a semi-conducting material, in which the current flowing between two electrodes is controlled by the voltage or current at another electrode. This item is intended to cover all devices incorporating a semi-conducting crystal of any material with three or more electrodes, which are used as amplifiers, oscillators, trigger devices, etc. in electronic circuits. For phototransistors see item 1548.)
- 1548 Photoelectric cells, as follows:  
(a) photoelectric cells with a peak sensitivity at a wave length longer than 12,000 Angstrom units;  
(b) phototransistors (photo-conductive cells) with a response time constant of one millisecond or less measured at the temperature at which the time constant is minimum.  
(Note: The time constant is defined as the time taken from the application of a light stimulus for the current increment to reach a value of  $1-1/e$  times the final value, i.e., 63% of the final value.)
- 1549 Photomultiplier tubes; and specialized parts therefor.
- 1553 X-ray tubes (flash discharge type).
- 1555 Image converters and electronic storage tubes of all kinds, (excluding commercial standard television broadcasting camera tubes and commercial standard X-ray amplifier tubes), but including vidicon tubes. (See also item 3544).
- 1558 Valves (tubes) electronic, and specialized parts, as follows:  
(a) valves whose output-input ratio at 300 megacycles per second is 50 percent or more of the output-input ratio at 20 megacycles per second when measured under the same operating voltages and load impedance;  
(b) those of a kind specially designed for use at frequencies of more than 250 megacycles per second;  
(c) indirectly heated valves of a kind that can be passed through a circular hole  $1/2"$  in diameter;  
(d) those designed to withstand accelerations greater than 450g (g-acceleration under gravity, i.e., 984 cm/sec/sec).
- 1559 Thyatron and ignitron tubes as follows:  
(a) those rated for continuous operation with peak current and peak voltage exceeding 100 amperes and 9000 volts at a pulse repetition frequency of 200 or more pulses per second;  
(b) hydrogen thyratrons of any rating.  
(Note: The following are definitions of "thyatron" and "ignitron":  
Thyatron - any hot cathode gas-filled tube containing three or more electrodes, in which anode current flow is initiated by a control electrode;  
Ignitron - any mercury pool (cold cathode) tube with three or more electrodes, in which discharge is initiated by an igniter electrode.)

(This revision affects item 1555. See ACEP PD No. 1101 (Rev.1) Am. 39.)

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\*ELECTRONICS AND PRECISION INSTRUMENTS (501-599 series)-Continued

Other Electronics and Precision Instruments

- 1563 Balances, electronic, capable of detecting differences in weight smaller than 10 micrograms; and specialized parts therefor.
- 1565 Computers, electronic (except business-type calculating machines).
- 1566 Equipment specially designed to produce electronic assemblies:  
(a) by depositing or printing on insulating panels (including plates and wafers), or otherwise forming in situ, component parts other than basic wiring; or  
(b) by automatically inserting and/or soldering components on insulating panels (including plates and wafers), to which wiring is applied by printing or other means.
- 1568 Control equipment the following:  
(a) synchros, as follows:  
(1) control types (transmitters, differential transmitters, and transformers) rated to have an electrical error of 18 minutes or less when tested by the proportional voltage method;  
(2) torque types;  
(i) Transmitters and differential transmitters rated to have an electrical error of 18 minutes or less when tested by the proportional voltage method;  
(ii) receivers and differential receivers rated to have an accuracy of 1.5 degrees or less when tested by the dynamic method;  
(3) special instruments rated to have the same characteristics as synchros in (1) and (2) above, such as Microsyns and Synchro-Tels;  
(b) resolvers, including single-phase/single-phase, single-phase/two-phase, two-phase/two-phase, and three-phase/two-phase types as follows:  
(1) with a rated electrical error of 0.5 degrees or less;  
(2) with a rated perpendicularity error between axes of 10 minutes or less;  
(3) with a rated null voltage of 10 millivolts or less per maximum volt output;  
(c) amplifiers, electronic or magnetic, designed for use with resolvers, the following:  
(1) isolation types;  
(2) summing types;  
(d) linear induction potentiometers, as follows:  
(1) with a rated linearity of 1 percent or less;  
(2) with a rated null voltage of 10 millivolts or less per maximum volt output;  
(e) induction rate generators, as follows:  
(1) with a rated linearity of 1 percent or less;  
(2) with a rated signal-to-noise ratio of 50/1 or greater;  
(3) all temperature-compensated or temperature-corrected types;

(This revision affects item 1568. See ACEP PD No. 1101 (Rev.1) Am. 39.)

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- 1568 Control equipment the following: (continued)  
(f) servo motors (gear-head or plain), as follows:  
    (1) designed to operate from power sources of more than 300 cycles per second;  
    (2) designed to have a torque-to-inertia ratio of 3,500 radians per second per second or greater;  
(g) potentiometers, as follows:  
    (1) linear potentiometers with a rated linearity of 0.1 percent or less;  
    (2) non-linear potentiometers with a rated conformity of 1 percent or less.
- 1571 Magnetometers of the following types:  
(a) fluxgate;  
(b) electron beam sensing;  
(c) paramagnetic;  
(d) nucleonic;  
and specialized parts therefor.
- 1572 Magnetic recorders and/or reproducers (other than those designed for voice or music) and specialized recording media, parts and components therefor.
- 1576 Centrifugal testing apparatus or equipment possessing any of the following characteristics:  
(a) driven by a motor or motors having a total rated horsepower greater than 400 h.p.;  
(b) capable of carrying a payload of 250 lb. or more;  
(c) capable of exerting a centrifugal acceleration of 8 or more "g" on a payload of 200 lb. or more.
- 1577 Balloons, 1100 grams or more envelope weight deflated, capable of free flight but non-personnel carrying.
- 1579 Electron microscopes and the following parts therefor:  
(a) electron guns;  
(b) electron objective projection and condenser lenses (magnetic or electrostatic).
- 1582 Optical curve generators (grinders, surfacers, and polishers) and parts, capable of producing aspherical curves.

(This revision affects item 1568. See ACEP PD No. 1101 (Rev. 1) Am. 39.)

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\*ELECTRONICS AND PRECISION INSTRUMENTS (501-599 series)-Continued

Other Electronics and Precision Instruments - continued

- 1584 Oscilloscopes (cathode-ray) and specialized parts, as follows:
- (a) oscilloscopes possessing any of the following characteristics:
    - (1) a bandwidth greater than 5 megacycles (defined as the band of frequencies over which the loss does not exceed 3 decibels);
    - (2) a time base shorter than 0.05 microseconds per centimeter;
    - (3) containing or designed for the use of multiple beam tubes, or those of 3 or more cathode-ray tubes;
    - (4) employing accelerating potentials in excess of 5000 volts;
  - (b) specialized parts and accessories, as follows:
    - (1) oscilloscope cameras;
    - (2) amplifiers and pre-amplifiers with a bandwidth greater than 5 megacycles (defined as the band of frequencies over which the loss does not exceed 3 decibels).
- 1585 Photographic equipment, as follows: high speed ~~cinematograph~~ cameras, capable of recording at rates in excess of 250 ~~frames~~ <sup>pictures</sup> per second. \*
- 1587 Quartz crystals (worked or unworked) and plates, radio grade only.
- 1589 Resistors, temperature-sensitive (of a kind used in bolometers or in the measurement of electric power below 10 milliwatts but excluding electric lamps.)

\* changes per Amendment # 43.  
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1590. Photographic micro-flash equipment capable of giving a flash of 1/100,000 second or shorter duration, or with a frequency of 200 flashes or more per second.
1591. Spectrographs, spectrometers, monochrometers, and associated measuring equipment, as follows:
- (a) grating types with, or designed for use with diffraction gratings (originals or replicas, plane or concave); and gratings therefor;
  - (b) prism types:
    - (1) capable of a spectrum length of 20 cms between 9000 and 2000 Angstrom units, or
    - (2) designed for use with prisms having refracting face 35 mm or more in width;
  - (c) infra-red types, having an effective total prism base length over 2 inches (5 cm);
  - (d) recording or controlling densitometers or other specialized equipment for the quantitative measurement of spectra or spectrographic records.  
(NOTE: This does not include: (1) instruments limited to the use of replica plane grating not exceeding 1 inch (2.5 cm) in ruled width, and spares therefor, and (2) instruments of the "circle" type incapable of direct measuring to less than 5 seconds of arc.)
1593. Measuring and counting equipment as follows:
- (a) equipment capable of measuring time intervals of one second or less with an error not exceeding 2% of the interval measured or an error of 20 microseconds, whichever is the greater;
  - (b) equipment capable of counting at over 50,000 counts per second.
1594. Voltmeters, as follows:
- (a) DC vacuum tube voltmeters with full scale range of 1 millivolt or less, with or without AC adapters;
  - (b) AC vacuum tube voltmeters of laboratory type with full scale range of 0.01 millivolt or less.  
(NOTE: This excludes voltmeters specially designed for testing telephone lines.)
1598. X-ray diffraction and electron diffraction equipment and accessories, as follows:
- (a) X-ray diffraction units;
  - (b) X-ray tubes designed or intended for use in X-ray diffraction analysis;
  - (c) powder cameras with heating element for temperatures of 500°C (932°F) or above;
  - (d) single crystal oscillating and rotating X-ray goniometers with X-ray film or plate holders;
  - (e) electron diffraction units and specialized components therefor.

\* (For additional embargo items, see Part A.)

(This revision affects item 1591. See ACEP PD 1101 (Rev.1) Am. 16).

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18 → METALS, MINERALS & THEIR MANUFACTURES (601-699 series)Metals and Minerals Manufactures

1601. Anti-friction bearings (ball, roller, needle) and parts, as follows:

(a) "Special" bearings, as specified in Interpretative Note No. 2 (Revised);

(b) steel alloy "normal" bearings of the following kinds, with inner-ring bore diameter below 10 mm (or, if without bore, below 12.7 mm outer diameter) or over 150 mm:

(1) deep-groove ball;

(2) self-aligning ball;

(3) cylindrical roller;

(4) spherical roller;

(5) taper roller;

(6) needle roller;

(7) roller thrust types (spherical, cylindrical and taper);

(c) bearing parts as follows:

(1) all steel alloy rollers (except needle rollers) and balls (except "low quality" and "cycle quality" balls made of "normal" chrome steel, as described in Interpretative Note No. 2;

(2) all steel alloy outer rings, inner rings, retainers, and sub-assemblies (except any such parts useable only for bearings covered by item 2601).

1605. Carbonyl iron powder.

1615. Munitions components and materials, as follows:

(a) brass and bronze fabrications for primer anvils, fabrications for bullet cups (gilding metal, clad steel), cartridge link, primer cap, shell rotating band;

(b) rolled brass cartridge strip (with 68 to 72 percent copper);

(c) copper rotating bands for shells, and other copper munitions components;

(d) gilding metal, clad steel;

(e) rough steel forgings, steel and alloy castings for guns and for arms. (This includes, but is not limited to, the following: artillery material, machine guns, automatic weapons and small arms.)

(This revision affects item 1601 (c)(1). See ACEP PD No. 1101(Rev.1) Am.20.)

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METALS, MINERALS & THEIR MANUFACTURES (601-699 series) - Continued

Basic Metals and Mill Products

(Note: See also "Chemicals" for some metal compounds.)

1630. Scrap iron and steel.

1631. Magnetic materials of all types and of whatever form, e.g., powder, strip, sheet, castings and blocks, if possessing one or more of the following characteristics:

- (a) for sheet or strip, thickness of 0.003" (0.075 mm) and less;
- (b) initial permeability 20,000 or over;
- (c) remanance 85% of maximum flux or over;
- (d) a composition capable of an energy product greater than  $2 \times 10^6$  gauss-ounces, or containing more than 20 percent cobalt;
- (e) core loss of 0.5 watt per pounds at B equals 13,000 gauss and 50 cycles per second or less.

(NOTE: The definition of subitem (d) refers to values obtained using a properly heat-treated test bar.)

1635. Alloys containing:

- (a) 6% or more molybdenum (but 3% or more molybdenum in any alloys containing more than 14% chromium); or
- (b) 6% or more cobalt; or
- (c) 0.25% or more columbium or tantalum; or
- (d) nickel-bearing steels, n.e.s., containing a total of 35% or more of alloying elements.

(This revision affects item 1631. See ACEP PD No. 1101 (Rev.1) Am. 23.)

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METALS, MINERALS & THEIR MANUFACTURES (601-699 series) - continued

Basic Metals and Mill Products - continued

(Note: See also "Chemicals" for some metal compounds.)

1636- Aluminum, as follows:

- (a) aluminum hard alloys used in aircraft construction, as follows:
    - (1) crude forms (primary and secondary), including ingots, pigs, blooms, slabs, billets, blocks, grains, granules, lumps, notched bars, pellets, wire bars.
    - (2) semifabricated forms, as follows:
      - (i) wrought or worked materials fabricated by rolling, drawing, extruding, forging, impact extruding, pressing and graining;
      - (ii) cast material produced by casting in sand, die, metal or plaster moulds.
    - (3) scrap.
  - (b) aluminum powder for sintering and sintered aluminum powder (SAP) products.
  - (c) aluminum powders, n.e.s., except pastes and greased flakes.
- (Note: Hard alloys are to be interpreted as aluminum alloys where:
- (1) the average copper content is 1% or more irrespective of other elements;
  - (2) the average copper content is less than 1% and the zinc content is 4% or more, or the silicon content is 3.5% or more, or the magnesium content is 9.5% or more.)

1648- Cobalt, as follows:

- (a) ores, residue and concentrates, including arsenical crystals;
  - (b) cobalt-bearing scrap;
  - (c) metal;
  - (d) compounds, excluding:
    - (1) paint driers;
    - (2) cobalt organic artificial coloring matters; and
    - (3) other paint pigments.
- (Note: Paint driers, for this purpose, are regarded as being products, or preparations of such products, containing combined cobalt with or without other metals, produced in any way by reaction with one or more of the following: linseed oil, linseed oil fatty acids, colophony, tall oil, naphthenic acids, 2-ethylhexanoic acid.)

(This revision affects item 1636(c). See ACFE PD No. 1101 (Rev. 1) Am. 4.)

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METALS, MINERALS & THEIR MANUFACTURES (601-699 series) - ContinuedBasic Metals and Mill Products - continued

(Note: See also "Chemicals" for some metal compounds.)

## 1649 • Columbium (niobium) as follows:

- (a) ores and concentrates;
- (b) scrap;
- (c) metal and alloys (including ferro-columbium and ferrocolumbium-tantalum).

1650 • Copper, as follows; *revised*

- (a) copper ores, *revised* concentrates, regulus, and matte; *see 1622*
- (b) copper and copper alloy scrap and old metal;
- (c) copper and copper-base alloys in the form of anodes and cathodes, billets, blocks, blooms, cakes, ingots, ingot bars, pellets, pigs, shot, slabs, sticks, wire bars, and other unwrought shapes;
- (d) Copper and copper-base alloy semifinished products, as follows: sheets, strips, plates, rods (including wire rods and rolled wire), pipe and tubing.

(This revision affects item 1650. See ACEP PD No. 1101 (Rev. 1) Am. 5.)

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METALS, MINERALS & THEIR MANUFACTURES 9601-699 series) - Continued

Basic Metals and Mill Products - Continued

(Note: See also "Chemicals" for some metal compounds.)

1653 • Germanium and germanium compounds.

1654 • Magnesium base alloys having a content of 0.4 percent or more of zirconium, or 1.5 percent or more of thorium, or 1 percent or more of rare earth metals (cerium mischmetal), as follows:

- (a) crude forms (primary and secondary), including billets, blocks, ingots, notched bars, slabs, sticks and crystals;
- (b) semifabricated forms, as follows:
  - (1) wrought or worked material fabricated by rolling, drawing, extruding, forging, impact extruding, pressing and graining;
  - (2) cast material produced by casting in sand, die, metal or plaster moulds.

1655 • Mercury metal.

1658 • Molybdenum, as follows:

- (a) ores and concentrates;
- (b) scrap;
- (c) metal (including wire, tubing and platinum clad tubing), ferro-molybdenum, and alloys (except those covered by items 1635(a) and 3636);
- (d) compounds containing more than 35 percent molybdenum (except molybdenum organic artificial colouring matters containing less than 50 percent molybdenum); see illustrations in Interpretative Note No. 3;
- (e) cemented or sintered carbides.

(Note: The Committee will favorably consider, as accidents of definition, proposals to export wire which can be shown to have no strategic applications.)

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METALS, MINERALS & THEIR MANUFACTURES (601-699 series) - Continued

Basic Metals and Mill Products - Continued

(Note: See also "Chemicals" for some metal compounds.)

1661. Nickel, as follows:

- (a) ores, concentrates (including primary residues), and matte;
  - (b) nickel and nickel-base alloys (i.e., alloys containing 30 percent or more nickel), as follows:
    - (1) unwrought forms (primary and secondary), including pigs, ingots, blooms, billets, slabs, rods, grains, shot, lumps, pellets, "rondelles" and notched bars;
    - (2) castings of all forms;
    - (3) wrought (semi-fabricated) forms including those fabricated by rolling, drawing, extruding, forging and pressing;
    - (4) anodes, cathodes, electrodes and welding rods;
  - (c) powder in all forms;
  - (d) oxide and scrap.
- (Note: It is understood that the wrought (semi-fabricated) forms covered by sub-item (b) (3) above do not include:
- (1) rings;
  - (2) wrought forms of dental alloys containing all of the following, 80 but less than 90 percent nickel, 5 but less than 8 percent chromium, and 2 but less than 5 percent copper, as follows:
    - (a) plates, 0.24 mm or more, but not exceeding 0.5 mm, in thickness, and 15 grams or less in their individual weight;
    - (b) wires, 0.4 mm or more, but not exceeding 1 mm, in diameter.)
- (See also items 1635, 3636 and 3661.)

1668. Tungsten wire and filament, coated or uncoated.

(Note: The Committee will favorably consider, as accidents of definition, proposals to export wire which can be shown to have no strategic applications.)

(This revision affects Note under item 1661. See ACEP PD No. 1101(Rev.1) Am. 24.)

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METALS, MINERALS & THEIR MANUFACTURES (601-699 series) - continued

Basic Metals and Mill Products - continued

(Note: See also "Chemicals" for some metal compounds.)

1670. Tantalum, as follows:

- (a) ores and concentrates;
- (b) metal, and ferro-tantalum;
- (c) compounds;
- (d) seamless pipe and tubing.

1671. Titanium metal (including sponge) and titanium metal alloys (excluding ferro-titanium), as follows:

- (a) in all unwrought forms;
- (b) in all semifabricated forms;
- (c) scrap.

\* (For additional embargo items, see Part A.)



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30 → \*CHEMICALS & PETROLEUM PRODUCTS (701-799 series)  
(See also "Metals, Minerals and their Manufactures"  
for some metal chemical compounds.)

20 → A. CHEMICALS (701-767 subseries)

1701. Detonators:  
(a) mercury fulminate, lead azide, lead styphnate, and lead thiocyanate; and detonating or priming compositions (mixtures) containing one or more of these chemicals;  
(b) sodium azide.
1702. Hydraulic fluids, synthetic.  
(Note: See item 1793 for other hydraulic fluids.)
1703. Stabilizers for explosives, as follows:  
(a) ethyl and methyl centralites;  
(b) diphenylamine;  
(c) NN-diphenylurea (unsymmetrical diphenylurea);  
(d) methyl-NN-diphenylurea (methyl unsymmetrical diphenylurea);  
(e) ethyl-NN-diphenylurea (ethyl unsymmetrical diphenylurea);  
(f) ethyl phenyl urethane;  
(g) diphenyl urethane;  
(h) diortho tolyl-urethane;  
(i) 2-nitrodiphenylamine.
1713. Barium nitrate.
1715. \*Boron, the following:  
(a) boron minerals, crude and refined;  
(b) boron element (metal), all forms, including grains and powder;  
(c) boron compounds and mixtures, n.e.s., the following:  
(1) boric acid and salts (sodium, potassium, ammonium, magnesium and calcium) and organo-borates, crude or refined, not including perborates;  
(2) boric oxide, boron trifluoride and its complexes, boron trichloride and its complexes and fluoroborates;  
(3) other boron compounds and mixtures containing 10% or more of boron in combined and/or elemental (metallic) form (but not including: perborates, metal borates - other than those in (c)(1) above, boron nitride and boron carbide).
1720. Dinitrotoluenes.
1725. Furfuryl alcohol; tetrahydrofurfuryl alcohol.

\*For full U.S. coverage, see items ~~4653~~ and 4742. (See Amend #37)

(This revision affects item 1715. See ACEP PD No. 1101(Rev.1) Am. 35.)

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\*CHEMICALS & PETROLEUM PRODUCTS (701-799 series) - continued

A. CHEMICALS (701-767 subseries) - continued

1727. Glycols and their derivatives, as follows:  
    (a) ethylene glycol (ethanediol-1,2), propylene glycol (propanediol-1,2); and mixtures consisting mainly of one or both of these compounds;  
    (b) thiodiglycol, and mixtures consisting mainly thereof.
1729. Hexamethylenetetramine.
1731. Hydrazine; hydrazine hydrate; hydrazine salts.
1732. Hydrogen peroxide (50 percent strength and over).
1738. Methyl methacrylate clear sheets or sheeting, whether single or laminated, suitable for aircraft use.  
    (Note: This sheet is of optical quality,  $\frac{1}{4}$  inch (6.3 mm) or more in thickness, meeting aircraft material specifications.)
1740. Polymethyl alpha-chloroacrylate (Gafite or PMCA).
1741. Nitroguanidine.
1742. Guanidine nitrate.

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\*CHEMICALS & PETROLEUM PRODUCTS (701-799 series)-continued

A. CHEMICALS (701-767 subseries)-continued

- 1744 Pentaerythritol; pentaerythritol tetranitrates.
- 1748 Picric acid (trinitrophenol).
- 1755 Silicon(e) oils and rubbers.
- 1757 Silicon of a purity of 99.9 percent or more.
- 1758 Crystals of lithium fluoride or of calcium fluoride the following:
  - (a) natural or artificially made, worked or partly worked;
  - (b) artificially made or specially selected natural unworked weighing not less than 2.5 grams each.

10 → B. PETROLEUM PRODUCTS (768-799 subseries)

Crude; Fuels; Lubricants

- 1773 Gasoline (motor and aviation).
- 1774 Kerosene.
- 1775 Reference fuels, referee fuels, and calibrating fuels.
- 1780 Lubricating oils and greases petroleum based.  
(Note: Governments may permit shipment of minor quantities of lubricants, for example under special servicing arrangements, as "administrative exceptions". These should be reported in monthly statistics.)
- 1781 Synthetic lubricating oils and greases (ester type).

Additives, Blending Agents, etc.

- 1786 Additives for lubricating oils and greases and for diesel fuels.
- 1788 Tetra-ethyl lead; tetra-ethyl lead fluid; and any mixture containing more than 3 cc of tetra-ethyl lead per gallon (0.66 cc per litre).

(This revision affects item 1758. See ACEP FD No. 1101 (Rev. 1) Am. 36.)

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\*CHEMICALS AND PETROLEUM PRODUCTS - Continued

B. PETROLEUM PRODUCTS - Continued

Additives, Blending Agents, etc. - continued

1789. High octane blending agents for aircraft fuels, as follows:
- (a) alkylates (aviation grade);
  - (b) codimer;
  - (c) cumene (isopropyl benzene);
  - (d) diisobutylene;
  - (e) diisopropyl (2, 3, dimethylbutane);
  - (f) hydrocodimers;
  - (g) hydropolymers;
  - (h) isooctanes;
  - (i) isohexanes;
  - (j) isohexanes;
  - (k) isopentane;
  - (l) neohexane;
  - (m) neopentane;
  - (n) triptane (2, 2, 3 trimethylbutane);
  - (o) monomethylaniline;
  - (p) isopropylether;
  - (q) ethyl benzene
1790. Ignition quality (cetane number) improvers for diesel fuels.
- 1793 Hydraulic fluids, petroleum based, possessing all of the following characteristics:
- (a) Kinematic viscosity of 4.6 centistokes or greater at 210°F (98.9°C);
  - (b) Pour point of -30°F (-34.4°C) or lower;
  - (c) Viscosity index (V.I) of 130 or higher.

(This revision affects item 1793. See ACEP PD No. 1101 (Rev. 1) Am. 5.)

\* (For additional embargo items, see Part A.)

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3  
↓  
\*RUBBER & RUBBER PRODUCTS (801-899 series)

- 1801 Butyl synthetic rubber.
- 1820 Pneumatic tire casings (excluding tractor and farm implement types), as follows:
- (a) of a kind specially constructed to be bullet proof or to run when deflated;
  - (b) in the following sizes and ply ratings:
    - (1) 8 ply rating and over in the size 9.00 x 16
    - (2) 10 ply rating and over in the size 34 x 7;
    - (3) 12 ply rating and over in the sizes 14.00 x 20 and 12.00 x 20;
  - (c) with off-the-road treads in the following sizes and ply ratings:
    - (1) 6 ply rating and over in the sizes 7.00 x 16, 6.50 x 20 and 6.50 x 19;
    - (2) 8 ply rating and over in the sizes 9.00 x 20, 7.50 x 20 and 7.00 x 20.
- 1840 Water lubricated bearings with bearing surface made with Buna N compounds.

\* (For additional embargo items, see Part A.)

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\*MISCELLANEOUS (901-999 series)

1910. Raw optical glass in the mass (tinted or untinted) as follows:
- (a) blocks, plates (slabs), pressings and moulds (other than rough-moulded lenses and prisms), with a unit weight of 1.0 kilograms or more;
  - (b) rough-moulded lenses with a unit weight of 0.5 kilograms or more;
  - (c) rough-moulded prisms with a unit weight of 0.5 kilograms or more.
1920. Paper or synthetic film for dielectric use (condenser tissue), as follows:
- (a) synthetic film 0.0015 inches (.038 mm) or less in thickness;
  - (b) coated paper 0.0015 inches (.038 mm) or less in thickness;
  - (c) uncoated paper 0.0004 inches (.010 mm) or less in thickness.
- 1930 Nylon parachute cloth.
- (Note: This covers nylon cloth with the following characteristics:
- Maximum weight: 1.1 oz per sq yd (35 gr per sq m);
  - Maximum thickness: 0.0032 inch (0.08 mm);
  - ~~Minimum~~ <sup>Amend. #40</sup> Minimum breaking strength: 40 lbs per inch warp and filling;
  - ~~Minimum~~ <sup>Minimum</sup> tear strength: 3.5 lbs warp and filling;
  - Elongation: 22% minimum;
  - Air permeability: 80 to 100 cu ft per minute per sq ft of cloth.)

\* (For additional embargo items, see Part A.)

(This revision affects item 1930. See ACEP PD 1101(Rev.1) Am. 30.)

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5 Feb. 1957

✓  
25 items on 14/11

CATEGORY  
C-II

II

U. S. MASTER EXPORT SECURITY LIST

(Part C Section II)

METALWORKING MACHINERY (001-099 series)

CODE

Boring Machines

- 2001 Vertical boring and turning mills, as follows:  
Non-automatic types with table diameter 72 inches  
(1.83 m) up to and including 96 inches (2.50 m).
- 2002 High precision (fine) boring machines, production types  
only, capable of an accuracy of 0.0005 inch (0.015 mm)  
or better.
- 2003 Horizontal combination boring, drilling, and milling  
machines (horizontal boring machines).

Milling and Planing Machines

- 2050 Horizontal spindle bed type automatic milling machines  
(cycle type) with tables 20 inches (50 cm) wide and  
over and/or 48 inches (1.2<sup>2</sup> m) long and over.
- 2052 Planing machines, planer milling machines, and combination  
planer and planer milling machines, with capacity for work  
pieces 48 inches (1.22 m) up to but not including 72 inches  
(1.8<sup>3</sup> m) wide or 15 feet (4.57 m) up to but not including  
20 feet (6.10 m) long.

Forming Machines

- 2070 Forging hammers, as follows:  
(a) having a falling weight of 3 tons up to and including  
6 tons (English or metric);  
(b) steam, air or mechanical hammers of rated sizes 2.5 tons  
up to and including 5 tons (English or metric).
- 2074 Forging machines as follows:  
(a) forging machines capable of operating on bar stock of a  
diameter exceeding 3.5 inches (8.9 cm) or of equivalent  
cross section;  
(b) forging roll machinery.



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CHEMICAL AND PETROLEUM EQUIPMENT (101-199 series)

A. CHEMICAL EQUIPMENT (101-149 subseries)

Compressors, Pumps and Valves

- ✓ 2129. Pumps (except vacuum pumps and those pumps covered by items 1131(a) and 1131(c)) delivering liquids separately or in combination with solids and/or gases and having all flow contact surfaces made of 10 percent or more chromium or nickel, either separately or combined.
- ✓ 2133. Pipe valves and cocks having all flow contact surfaces made of 10 percent or more chromium or nickel, either separately or combined; (except the following types of valves:  
(a) check, non-return and float valves;  
(b) pressure relief valves designed for working pressures of less than 450 psi (32 kg per sq cm);  
(c) valves and cocks specially designed for milking machines and for electrical household refrigerators and home freezers).

B. PETROLEUM EQUIPMENT (150-199 subseries)

2154. Steel pipe, casing and tubing, as follows:  
(a) welded or seamless steel pipe over 24 inches (61 cm) outside diameter, conforming with API specifications for line pipe;  
(b) welded or seamless steel casing and tubing, conforming with API specifications for oil country tubular products.

(This revision affects item 2129. See ACEP PD No. 1101 (Rev. 1) Am. 6)).

TRANSMITTAL SLIP		DATE
TO:		
ROOM NO.	BUILDING	
REMARKS:		
<p><i>Page 38</i></p> <p><i>W.P.</i></p> <p><i>8/27</i></p>		
FROM:		
ROOM NO.	BUILDING	EXTENSION

FORM NO. 241  
1 FEB 55

REPLACES FORM 36-8  
WHICH MAY BE USED.

(47)

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GENERAL INDUSTRIAL EQUIPMENT

CODE

(301-399 series)

TRANSPORTATION EQUIPMENT (401-499 series)

Vessels

2401 Dredges and specialized dredge equipment and components, such as grabs, buckets, cutters, ladders, centrifugal pumps, and floating and shore pipelines.

• (2405) Ice-breakers of under 2000 shaft hp and similar vessels designed for breaking ice having any of the following:  
(a) bow propeller;  
(b) special hull shape;  
(c) propulsion plant permitting quick reversing and development of maximum power at all speeds;  
(d) stern saddle arrangements for towing operations;  
(e) excessive electrical supplies and pumping facilities.

2415 Other vessels (exclusive of types covered by item 1417), as follows (and hulls, or parts of hulls therefor):

- (a) merchant ships having (1) a gross tonnage over 7000 gross registered tons, independent of speed, or (2) an operating speed loaded of over 12 knots;
- (b) deleted (see item 2416);
- (c) merchant ships, n.e.s.;
- (d) other vessels, n.e.s., over 40 feet (12 m) in length or over 50 shaft hp (or equivalent).

(Note: Sub-item 2415a is subject to a special understanding.)

(2416) Fishing vessels and hulls therefor, with length between perpendiculars over 50 feet (15 m), except those covered by items 1416 and 3416).

Automotive Equipment (except tires)

(2450) Automotive vehicles or chassis, having front and rear drives, n.e.s.; and specially designed parts therefor.

Railway Equipment

(2479) Well cars with a load capacity of 80 tons or over.

{ 3479  
3472  
3474

(This revision affects item 2416. See ACEP PD No. 1101 (Rev. 1) Am. 8.)

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(Rev. 11/1/54)

ELECTRONICS AND PRECISION INSTRUMENTS

(501-599 series)

Other Electronics and Precision Instruments

- 2568 • Electronic automatic controlling units, whether or not including associated regulating units, designed to regulate flow by continuous action as a function of one or more industrial process variables and capable of operating a regulating valve by pneumatic, hydraulic or electric means in response to an AC or DC voltage produced by a measuring unit in the process stream. (Note: "Controlling unit" means the unit comprising those elements which apply control action to the regulating unit in relation to the deviation, which it determines by comparing (by using an electronic feed back stabilized amplifier) the desired value with the value of the controlled condition as indicated by the measuring unit.)
- 2580 • Continuous measuring pH equipment of the following types, whether separate or as components of other pH equipment:
- (a) electrode assemblies of the flow or immersion type which include a resistance thermometer element and a glass electrode of 250 megohm or higher at 25°C, designed for use with amplifiers covered by subitem (b);
  - (b) amplifiers which include automatic temperature compensation as a function of the amplifier and are capable of operating ~~on an input current of 10<sup>-12</sup> amperes~~ <sup>designed to operate with an input current of 10<sup>-12</sup> amperes</sup> (amendment 26)

(This revision affects items 2568 and 2580. See ACEP PD No. 1101(Rev.1) Am.4.)

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METALS, MINERALS AND THEIR MANUFACTURES (601-699 series)

Metal and Mineral Manufactures

2601. Anti-friction bearings (ball, roller, needle) and parts, as follows:

(a) steel alloy "normal" bearings of the following kinds, regardless of dimensions:

- (1) double-row ball;
- (2) angular contact ball;
- (3) separable ball;
- (4) ball thrust;

(b) all other steel alloy "normal" bearings with inner-ring bore diameter from 10 mm. (12.7 mm. outer diameter, if without bore) up to and including 150 mm.;

(c) steel alloy bearing parts as follows, when useable only for bearings covered by sub-items 2601(a) and (b) above: steel alloy outer rings; inner rings; separators; and sub-assemblies.

(See also items 1601 and 3601.)

Basic Metals and Mill Products

(Note: See also "Chemicals" for some metal chemical compounds.)

2635. Aluminum metal and alloys, n.e.s., as follows:

(a) crude forms (primary and secondary), including ingots, pigs, blooms, slabs, billets, blocks, grains, granules, lumps, notched bars, pellets, wire bars, (except hard alloys covered by item 1636);

(b) scrap;

(c) deleted. (See item 1636(c)).

(Note: It was understood that it would be impossible from the control point of view to separate scrap under item 1636 from scrap under item 2635 and that accordingly no exports of scrap in any form would be authorized.)

2636. Nickel-bearing alloy steels, n.e.s., as follows:

(a) nickel-bearing alloy steels (other than in the forms specified in sub-item (b)) having a nickel content of 6 percent or more and containing a combined nickel-chromium content of 22 percent or more;

(b) nickel-bearing alloy steel tubing of the non-stabilized type, having a nickel content of 6 percent or more and containing a combined nickel-chromium content of 22 percent or more, with both of the following characteristics:

- (i) outside diameter of 20 mm. or more but not exceeding 57 mm. and
- (ii) wall thickness of 2 mm. or more but not exceeding 2.5 mm.

(Note: non-stabilized nickel-bearing alloy steel tubing means such tubing which does not contain columbium, tantalum or titanium.)

2671. Titanium carbide.

(This revision affects item 2636. See ACEP PD No. 1101 (Rev.1) Am. 8.)

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CHEMICALS AND PETROLEUM PRODUCTS (701-799 series)  
(See also "Metals, Minerals and their Manufactures"  
for some metal chemical compounds.)

A. CHEMICALS (701-767 subseries)

2764 Deleted. (See item 3764.)

(This revision affects item 2764. See ACEP PD No. 1101 (Rev. 1) Am. 33.)

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RUBBER AND RUBBER PRODUCTS

(801-899 series)

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MISCELLANEOUS (901-999 series)

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5 Feb. 1959

✓  
63 items on 12/17

CATEGORY  
C-III

III

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U. S. MASTER EXPORT SECURITY LIST

(Part C Section III)

METALWORKING MACHINERY (001-099 series)

<u>Drilling and Tapping Machines</u>		<u>CODE</u>
3008 ✓	Multi-station machine tools in which the work piece is indexed or transferred successively from station to station.	Q(P)-4A(part)
<u>Grinding Machines</u>		
3010 ✓	External cylindrical grinding machines, <u>centerless</u> (whether or not automatic sizing).	S(X)
3011 ✓	Internal cylindrical grinding machines, mechanical or hydraulic feed, production types only ( <u>i.e.</u> , automatic feed, automatic sizing, or centerless).	Q(P)-4A(part)
3012 ✓	Combined internal and external cylindrical grinding machines.	S(X)
3017 ✓	Single-spindle surface grinders, n.e.s., with table width of 12 inches (300 mm) or more.	S(X)
3018 ✓	Crankshaft, crankpin, and camshaft grinders, with capacity for shafts 48 inches (1.22 m) long or over, ( <u>except</u> those not exceeding 5 metric or English tons total weight and designed for or equipped with a wheel head motor not exceeding 12 hp).	Q(P)-4A(part)
<u>Lathes</u>		
3034 ✓	Axle lathes	S(X)
<u>Milling and Planing Machines</u>		
3050 ✓	Automatic milling machines (cycle type) with tables 20 inches (50 cm) wide and over and/or 48 inches (1.22 m) long and over ( <u>except</u> horizontal spindle bed type covered by item 2050).	S(X)
3055 ✓	Horizontal draw-cut shapers, hydraulic or mechanical, with a stroke of 10 inches (25 cm) or more.	S(X)

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METALWORKING MACHINERY (001-099 series) - continued

Attachments and Accessories

COLE

- 3067 ✓ Metal cutting and working tools (not incorporating diamonds) for machine operations, as follows:  
(a) broaching tools, (except those covered by item 1087);  
(b) gear cutting tools, (except hobs);  
(c) forging roll sets.

S(X)

- 3068 ✓ Carbide and carbide-tipped cutting tools or dies for metalworking machinery, as follows:  
(a) standard design;  
(b) special design;  
(c) inserts (tips).

S(X)

Forming Machines

- 3072 ✓ Presses, mechanical and hydraulic with rated pressures 1000 tons or less.  
(Note: The "tons" mentioned are those commonly used in the metal-forming industry of the exporting country.)

Q(P)-4A(part)

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CHEMICAL AND PETROLEUM EQUIPMENT (101-199 series)

A. CHEMICAL EQUIPMENT (101-149 subseries)

CODE

Specialized Processing Equipment

- |          |  |               |
|----------|--|---------------|
| ✓ 3107 ✓ | Equipment for the production of chlorine (gaseous or liquid), sodium or magnesium. | Q(P)-4A(part) |
| ✓ 3120 ✓ | Processing equipment operating at pressures over 450 psi (32 kg per sq cm).        | S(X)          |
| ✓ 3124 ✓ | Cast iron shafts for pyrites roasters.   | Q(P)          |

Compressors, Pumps and Valves

- |          |   |      |
|----------|---|------|
| ✓ 3132 ✓ | Vacuum pumps, n.e.s., all types, designed to produce a vacuum of 0.1 mm of mercury pressure absolute or less; and specially designed parts. | Q(P) |
|----------|---|------|

Other Chemical Equipment

- |          |   |      |
|----------|---|------|
| ✓ 3142 ✓ | Pipe and tubing made of or lined with polyethylene. | S(X) |
|----------|---|------|

B. PETROLEUM EQUIPMENT (150-199 subseries)

- |        |  |      |
|--------|--|------|
| 3154 ✓ | Welded or seamless steel pipe of 24 inches (61 cm) outside diameter or less, conforming with API specifications for line pipe. | S(X) |
|--------|--|------|

(This revision affects item 3132. See ACEP PD No. 1101 (Rev. 1) Am. 17.)

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*W. H. S.*

*8/27/57*

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GENERAL INDUSTRIAL EQUIPMENT (301-399 series)

CODE

Metallurgical, Mill and Foundry Equipment

3302✓

Casting equipment, as follows:

S(X)

- (a) die-casting and centrifugal casting machines  
(except special artillery casting machines as  
covered by item 1086);
- (b) equipment or plants for continuous casting of  
metals into partially-processed mill product  
forms.

Construction and Conveying Machinery

3323✓

Power-operated excavators, shovels of the excavator  
type, and cranes (except those covered by item 1325).

\*Q(P)-4A(Part)  
S(X)

\*See supplement to ACEP Program Determination No. 502 (Revision 1)  
for U.S. licensing guide.

(This revision affects item 3323. See ACEP PD No. 1101(Rev.1) Am. 1.)

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TRANSPORTATION EQUIPMENT (401-499 series)

Vessels

CODE

3416 Fishing vessels, as follows:

S(X)

- (a) steel bonito and tuna vessels over 50 feet (15 m) but under 130 feet (40 m) in length between perpendiculars, either fitted with sponson platforms for line fishing or of the long line type;
- (b) cutters (i.e., small coastal fishing vessels), having the following characteristics:
  - (1) motor driven;
  - (2) fitted with sailing equipment;
  - (3) length between perpendiculars over 50 feet (15 m) but not over 81 ft. 3 in. (25 m);
  - (4) beam not over 21 ft. 2 in. (6.4 m);
  - (5) draught not over 8 ft. 1 in. (2.5 m);
  - (6) engine not over 120 hp, including a normal electric generator not over 5 KW.

(See also items 1416 and 2416.)

Marine Equipment (except motors)

3430 Galvanized steel cable, rope, strand or cord, of all types with or without a textile or fibre core, containing one or more strands composed of three or more threads or wires, provided that any one such thread or wire has a tensile strength (breaking strength) of 180 kg per sq mm or more.

S(X)

3441 Marine steam boilers, n.e.s., having a capacity to generate less than 11 lbs. of steam per sq. ft. (54 kg per sq m) of tubular heating surface at pressures of 450 psi (32 kg per sq cm) or more, and feed water heaters for such boilers.

S(X)

Railway Equipment

3470 Diesel electric, diesel and electric locomotives, as follows:

- (a) general service (line) switching and industrial locomotives of a gauge greater than 4 ft 8 in (1.42 m) or with an individual axle load greater than 12 metric tons;
- (b) parts specially designed for the above locomotives.

S(X)

3472 Flat cars with a load capacity of 40 tons or over.

S(X)

3474 Tank cars (rail) with a load capacity of over 10 tons.

S(X)

3477 Railway rails of 70 lbs. or more per linear yard (35 kg or more per meter).

S(X)

(This revision affects item 3416. See ACEP PD No. 1101 (Rev.1) Am. 8.)



TRANSPORTATION EQUIPMENT - continued

	<u>Railway Equipment</u> - continued	<u>CODE</u>
3479 ✓	Well cars with a load capacity from 40 tons up to, but not including, 80 tons.	S(X)
3481 ✓	Automatic (block type) railway signal systems ( <u>except</u> CTC system covered by item 1481); <u>and</u> parts specially designed for such systems.	S(X)

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ELECTRONICS AND PRECISION EQUIPMENT (501-599 series)

	<u>Radio, Radar, and Other Telecommunications Apparatus</u>	<u>CODE</u>
3517 ✓	Radio transmitters, transmitter amplifiers and sub-assemblies therefor, n.e.s.	S(X)
3519	Deleted. (See item 1523).	

(This revision affects item 3517. See ACEP PD No. 1101 (Rev. 1) Am. 17.)

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ELECTRONICS AND PRECISION EQUIPMENT (501-599 series) - continued

<u>Supplementary Equipment and Components for Radio, Radar and Communications Apparatus</u>		<u>CODE</u>
3522 ✓	Capacitors, as follows: (a) fixed capacitors in excess of 0.5 microfarad, having DC working voltage in excess of 1,000 volts, ( <u>except</u> those for power factor correction); (b) radio, frequency capacitors, either fixed or variable, rated in excess of 5 amperes at 1,000 kilocycles; (c) all vacuum and gas capacitors; (d) ceramic dielectric capacitors, or parts thereof, having a declared tolerance of temperature coefficient of capacitance of plus or minus 20 percent of the nominal capacitance or less; (e) polyethylene tetraphthalate dielectric capacitors; (f) tantalum electrolytic capacitors.	S(X)
3529 ✓	Measuring and testing equipment, n.e.s., rated for use at frequencies of 30 kilocycles and above. (Note: It is understood that no member Government should authorize unusually large exports of these instruments to the Soviet Bloc.)	Q(X)
3535 ✓	Reactors (made of materials covered by item 1631), n.e.s., as follows: (a) transformers, ( <u>except</u> power supply and power distribution types); (b) chokes and coils.	S(X)
<u>Electronic Valves (Tubes)</u>		
3544 ✓	Valves (tubes), electronic, n.e.s., and diodes (and specialized parts therefor), as follows: (a) valves capable of continuous plate dissipation of 1,000 watts or greater; (b) valves rated for operation at frequencies of 100 megacycles or more per second; (c) television camera tubes, standard commercial broadcast types only; (d) crystal diodes, incorporating germanium or silicon (silicon) of a kind designed to operate at frequencies below 250 megacycles per second. (Note: To the extent practicable, exports of the above items will be limited to amounts normally required as replacements for equipment which the exporting country previously supplied to the Soviet Bloc.)	Q(X)

METALS, MINERALS AND THEIR MANUFACTURES (601-699 series) - Cont'd.

Metal and Mineral Manufactures

CODE

3601 ✓ Anti-friction bearings parts as follows: S(X)  
needle rollers

(See also items 1601 and 2601.)

Basic Metals and Mill Products

(Note: See also "Chemicals" for some metal compounds.)

3636 ✓ Alloys, as follows: S(X)  
(a) alloys containing 2 percent or more, but less than  
6 percent molybdenum, (except those covered by  
item 1635(a));

(b) nickel-bearing alloy steels, n.e.s., containing S(X)  
4 percent or more nickel.

3640 ✓ Ferro-chrome (low carbon) containing a maximum of 0.03 Q(P)-4a(Part)  
percent carbon,

3641 ✓ Bismuth: metal and alloys. Q(P)

3650 ✓ Lead, as follows: S(X)

- (a) ores, concentrates, bullion and matte;
- (b) lead and lead base alloy (including antimonial lead),  
as follows:
  - (1) metal in the form of pigs, slabs, shot, bars, and  
other primary shapes;
  - (2) secondary lead in pig and slab form;
  - (3) scrap and old metal.

3652 ✓ Copper and copper-base alloy semifinished and finished Q(P) N-1  
products, as follows:  
(a) wire (uncovered);  
(b) cable (uncovered);  
(c) insulated wire (single strand conductor), of a  
diameter of 0.014 inch (0.35 mm) or less.

(This revision affects item 3652. See ACEP PD No. 1101 (Rev. 1) Am. 10.)

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METALS, MINERALS AND THEIR MANUFACTURES (601-699 series) - Cont'd.

Basic Metals and Mill Products - Continued

CODE

- 3654 ✓ Magnesium and magnesium base alloys (except those covered by item 1654), as follows: Q(X)-4B
- (a) magnesium and magnesium base alloys (primary) in the forms of billets, blocks, ingots, notched bars, powder, slab, sticks, and crystals;
  - (b) scrap and old metal;
  - (c) magnesium and magnesium base alloys (secondary);
  - (d) magnesium alloys in semifabricated forms, as follows:
    - (1) wrought or worked material fabricated by rolling, drawing, extruding, forging, impact extruding, pressing, graining, atomizing, and powder metallurgy;
    - (2) cast material produced by casting in sand, die, metal, or plaster moulds.
- 3661 ✓ Nickel and nickel-base alloys (i.e., alloys containing 30 percent or more nickel) in the following wrought (semi-fabricated) forms: rings. Q(P)
- (See also item 1661.)

(This revision affects item 3661. See ACEP PD No. 1101 (Rev.1) Am. 8.)

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(Rev.11/28/56)CHEMICALS AND PETROLEUM PRODUCTS (701-799 series)  
(See also "Metals, Minerals and their Manufactures"  
for some metal chemical compounds.)CODEA. CHEMICALS (701-767 subseries)

3715	Deleted. (See item 1715).	
3716 ✓	Carbon blacks, ( <u>except</u> channel blacks).	Q(P)-4A(Part)
3717 ✓	Cellulose, purified = containing not less than 88 percent alphacellulose.	S(X)
3720 ✓	Fluorinated hydrocarbons, as follows: (a) Dichlorodifluoromethane (F-12); (b) Trichloromonofluoromethane (F-11); (c) Monobromotrifluoromethane (F-13-B-1); (d) Dibromodifluoromethane (F-12-B-2); (e) Deleted. (See Part A, item 17(g).); (f) Deleted. (See Part A, item 17(h).).	Q(P)-4A(Part)
3724 ✓	Furfural.	Q(P)-4A(Part)
3725 ✓	2:4-Dinitrophenol.	S(X)
3750* ✓	Polyethylene, as follows: (a) with average molecular weight above 10,000; (b) with average molecular weight 10,000 or less.	Q(P)-4A(Part) S(X)
3752 ✓	Potassium tetroxide.	Q(P)-4A(Part)
3753 ✓	Phenol.	S(X)
3755 ✓	Siloxanes (other than those covered by item 1755) and silicon(e) greases.	Q(P)-4A(Part)
3760 ✓	Titanium tetrachloride.	Q(X)
3761 ✓	Sulphur (from whatever source): Crude, crushed, ground, refined, sublimed or flowers; <u>and</u> sulphur dusts, spray concentrates or other preparations containing 85percent or more sulphur.	Q(P)-4A(Part)
3764 ✓	Toluene.	Q(P)
3766 ✓	Polyvinylbutyral.	Q(P)-4A(Part)

\* - Item 3750 in I/L reads "Polyethylene".

(This revision affects item 3715. See ACEP PD No. 1101(Rev.1) Am. 35.)

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CHEMICALS AND PETROLEUM PRODUCTS (701-799 series)-Continued

B. PETROLEUM PRODUCTS (768-799 subseries)

CODE

- 3768 ✓ Crude petroleum. Q(X)-4B  
(Note: Governments should limit shipments to minor quantities, for example under special servicing arrangements. See also Doc. 1627 for a special understanding concerning this item.)
- 3769 ✓ Distillate fuel oils, including diesel oil. Q(X)-4B  
(Note: Governments should limit shipments to minor quantities, for example under special servicing arrangements. See also Doc. 1627 for a special understanding concerning this item.)
- 3772 ✓ Residual fuel oil. Q(X)-4B  
(Note: Governments should limit shipments to minor quantities, for example under special servicing arrangements. See also Doc. 1627 for a special understanding concerning this item.)

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RUBBER AND RUBBER PRODUCTS

CODE

(801-899 series)

3801 ✓ Natural rubber, including latex.  
(Note: Recognized as presenting special problems.)

Q(X)-4B

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MISCELLANEOUS

CODE

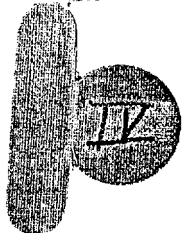
(901-999 series)

3920 ✓ Uncoated paper for dielectric use (condenser tissue),  
over 0.0004 inches (0.010 mm.) up to and including  
0.0015 inch (0.038 mm.) in thickness.

S(X)

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Category  
C-IV



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U.S. MASTER EXPORT SECURITY LIST

(Part C Section IV)

METALWORKING MACHINERY (001-099 series)

CODE\*

- 4022 Contour band sawing and band filing machines:  
(a) capable of using blades less than 5/16" wide;  
(b) designed to permit operator to select rate of cutting speed, and to vary such speed while in operation, and to maintain at all times the desired rate of speed with a variation of less than 2%.

Q(P)-4A

- ~~4023~~ Internal cylindrical grinding machines, fully automatic, as follows:  
(a) automatic sizing;  
(b) centerless.

~~Q(P)-4A~~

*ACEP Vol 1101 (Rev. 1) Am. 7  
10 January 1955*

\* In addition to the above unilaterally controlled items, the following I/L III items in this category have been adjudged (wholly or partially) to meet the indicated standard for a higher U.S. level of control than surveillance:

4A: 3008, 3011, 3018, 3072

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CHEMICAL AND PETROLEUM EQUIPMENT

CODE\*

(101-199 series)

\* The following I/L III items in this category have been adjudged (wholly or partially) to meet the indicated standard for a higher U.S. level of control than surveillance:

4A: 3107

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<u>ELECTRICAL &amp; POWER-GENERATING EQUIPMENT (201-299 series)</u>		<u>CODE</u>
4201	Combustion gas-turbine engines under 2000 h.p., except aircraft, including specially fabricated parts, (compressors, combustors and/or after-burners, turbines, fuel distribution and ignition system and controls, heat exchangers (regenerators)), whether for, or as a part of, a complete gas-turbine engine.	Q(P)-4A
4203	Steam boilers, stationary, having a capacity to generate 15,000 pounds of steam per hour or more at pressures more than 250 psig (17.5 kg/CM <sup>2</sup> ) and specially fabricated parts.	Q(P)-4A
4217	Resistance welders, 3-phase type only, and specially fabricated parts.	Q(P)-4A

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GENERAL INDUSTRIAL EQUIPMENT (301-399 series)CODE\*

- 4306 Off-the-road trucks, wagons, and trailers of over 10 cu. yd. (7.6 cu m) struck capacity. Q(P)-4A
- 4332 Tractors, diesel or gasoline powered: Q(P)-4A  
 (a) two-wheel drive, 70 brake hp or over;  
 (b) four-wheel drive, 70 brake hp up to 100 brake hp;  
 (c) tracklaying type, 110 drawbar hp and over.
- 4333 Abrasives, as follows: Q(P)-4A  
 (a) silicon carbide, boron carbide\*\* and fused aluminum oxide;  
 (b) grinding wheels and other abrasives containing silicon carbide or fused aluminum oxide; except the following:  
 (1) sheets, cut strips, discs and belts with backing of kraft and/or rope paper, when the backing weighs 140 grams per square meter (0.25 lbs. per square yard) or less and when the largest dimension does not exceed 32 cm. (12.6 inches);  
 (2) sheets, cut strips, discs and belts with textile backing, when the backing weighs 210 grams per square meter (0.4 lbs. per square yard) or less and when the largest dimension does not exceed 32 cm. (12.6 inches);  
 (3) abrasives in paste form when the abrasives are re-claimed or, if primary abrasives are used, when they constitute less than 50 percent of the weight;  
 (4) dental abrasives, as follows:  
     (i) unmounted wheels up to 1 inch (25.4 mm) in diameter where the arbor hole is less than 0.08 inches (2.03 mm);  
     (ii) wheels up to 1 inch (25.4 mm) in diameter and points mounted on a mandrel less than 0.093 inches (2.36 mm) in diameter;  
     (iii) metal strips less than 5/32 of an inch (3.97 mm) in width coated with abrasive grain;  
     (iv) flexible metal discs up to 3/4 of an inch (19.05 mm) in diameter, coated on one side with abrasive grain.

\*\* See also item 4742 (A). (a) — *See amend #37*

4334 Deleted. (See item 1354(b).)

\* In addition to the above unilaterally controlled items, the following I/L III items in this category have been adjudged (wholly or partially) to meet the indicated standard for a higher U.S. level of control than surveillance:

4A: 3323, 3715

(This revision affects item 4333(a). See ACEP PD 1101(Rev. 1) Am. 19.)

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TRANSPORTATION EQUIPMENT (401-499 series)CODE

4409	Automotive parts and gasoline engines ( <u>except</u> battery boxes, ball and roller bearings and parts, tires, inner tubes, and fan belts).	Q(P)-4A
4413	Landing mats for aircraft.	Q(X)-4B

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# MISSING PAGE

ORIGINAL DOCUMENT MISSING PAGE(S):

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METALS, MINERALS AND THEIR MANUFACTURES (601-699 series)

CODE\*

- |      |  |          |
|------|--|----------|
| 4619 | Steel blooms, slabs, billets, and hot-rolled bars specially prepared for the production of shells and projectiles.   | Q(X)-4B  |
| 4620 | Deleted. (See item 1757).  |          |
| 4652 | Copper and copper-base alloy semifinished and finished products, as follows:<br>(a) <u>wire (covered), except insulated wire (single strand conductor)</u> , of a diameter of 0.014 inch (0.35 mm) or less;<br>(b) cable ( covered). | Q(P) N-1 |
| 4653 | Deleted. (See item 1715).  |          |
| 4654 | Steel products, semifinished and finished, n.e.c.: carbon steel and alloy steel, including stainless.  | Q(X)     |

\* In addition to the above unilaterally controlled items, the following I/L III items in this category have been adjudged (wholly or partially) to meet the indicated standard for a higher U.S. level of control than surveillance:

4A: 3640

4B: 3654

(This revision affects item 4654. See ACEP PD No. 1101 (Rev. 1) Am. 41.)

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CHEMICALS AND PETROLEUM PRODUCTS (701-799 series)

CODE\*

4737	Phosphorus, and phosphorous oxychloride and trichloride.	Q(X)-4B
4741	Carbon black, channel.	Q(P)-4A
4742	Boron compounds and mixtures, n.e.s., as follows: (a) boron carbide, n.e.s.; (b) boron nitride;	Q(P)-4A(Part)
4743	Ethyl cellulose.	Q(P)-4A
4744	Deleted. (See item 1740).	

\*In addition to the above unilaterally controlled items, the following I/L III items in this category have been adjudged (wholly or partially) to meet the indicated standard for a higher U.S. level of control than surveillance:

4A: 3716, 3720, 3724, 3750, 3752, 3755, 3761, 3766

4B: 3768, 3769, 3772

(This revision affects item 4742. See ACEP PD No. 1101(Rev.1) Am. 37.)

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RUBBER AND RUBBER PRODUCTS (801-899 series)

CODE\*

4806 Synthetic S-type cold rubber (copolymer of butadiene and styrene polymerized at reaction temperature of 50° F or lower).

Q(P)-4A

\*The following I/L III items in this category have been adjudged (wholly or partially) to meet the indicated standard for a higher U.S. level of control than surveillance:

4B: 3801

This revision affects item 4806. See ACEP PD No. 1101 (Rev.1) Am. 36.)

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MISCELLANEOUS (901-999 series)

CODE

- |      |   |         |
|------|---|---------|
| 4913 | Metal bridges, portable and knockdown, and specially fabricated parts.  | Q(X)-4B |
| 4914 | Miscellaneous military and naval equipment, n.e.c., and specially fabricated parts, n.e.c. (This includes, but is not limited to pontoons; paravanes; ammunition bags; boxes and lockers; cartridge bags and belts, daggers; field baking equipment; saber chains; sabers; scabbards; military swords; camouflage nets; kitchen mess equipment; ground heaters, portable; bayonets.   | Q(X)-4B |
| 4915 | Military apparel of all types and materials (new and used), except: underwear and undergarments; socks, stockings, and anklets; handkerchiefs; neckties; trouser belts and suspenders; gloves and mittens (other than electrically heated); shoes, boots, slippers and overshoes (other than electrically heated and specially insulated); rain hats; sweaters, mufflers, and scarves; leggings; cotton trousers, and cotton shirts (other than Army and Marine Corps fatigue and field types); wearing apparel manufactured in the U.S. for any uniformed academies, police forces, customs officials, etc., provided not identical to any US military apparel; and other military outer wearing apparel that has been dyed or otherwise altered so that it can be readily distinguished from parts of the U.S. Army, Navy, Air Force, Marine Corps, and Coast Guard uniforms. | Q(X)-4B |
| 4916 | Parts and accessories, n.e.c., specially fabricated, for military watercraft, except converted.<br>( <u>U.S. Note:</u> This excludes any item covered in Part B.)   | Q(X)-4B |
| 4917 | Mechanical cotton pickers and specially designed parts.   | Q(X)-4B |

(This revision affects item 4917. See ACEP PD No. 1101 (Rev.1) Am. 29.)

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Interpretative  
Notes

INTERPRETATIVE NOTE NO. 1

MACHINES AND EQUIPMENT SPECIALLY DESIGNED FOR MANUFACTURING ARMAMENTS  
(Metalworking Machinery Category)

The following is an illustrative list of machines and equipment specially designed for manufacturing armaments (item 1086):

- (a) shell lathes
- (b) cartridge case lathes
- (c) bomb spinning lathes
- (d) shell banding presses
- (e) bomb nose and tail forging machines
- (f) shell tapping machines
- (g) armour plate drilling machines
- (h) artillery casting machines
- (i) bomb nose and tail boring machines
- (j) gun jump screw lathes
- (k) rifle working machines
- (l) shell nosing presses
- (m) shell loading or filling machines
- (n) shell forming presses
- (o) cartridge case presses
- (p) tank turret bearing grinding machines
- (q) aircraft skin milling machines
- (r) gun boring, turning, and rifling machines
- (s) gun barrel straightening presses
- (t) armour plate quenching presses
- (u) Jet engine compressor case boring machines
- (v) Jet engine compressor and turbine disc turning machines
- (w) Jet engine rotor grinders
- (x) shell and shell case extrusion and draw presses
- (y) gun barrel rifling and broaching machines; and broaching tools
- (z) gun barrel trepanning lathes.

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INTERPRETATIVE NOTE NO. 2 (REVISED)

Anti-friction bearings  
(ball, roller, needle) and parts.

I. SPECIAL BEARINGS - Description

"Special" bearings: For this purpose, the term "special" bearings means all ball and roller (including needle) bearings having any of the following characteristics:

- (1) "Special" materials - i.e., with rings, balls, rollers, or pins made from any steel alloy or other material except the following: low-carbon steel; SAE-52100 high carbon chromium steel; SAE-4615 nickel-molybdenum steel; or national equivalents. (Partial illustrative examples of "special" materials for this purpose are: high-speed tool steels; stainless steels; monel; beryllium).
- (2) "Special" heat treatment - i.e., processed by special heat treatment for the purpose of stabilizing the bearings for use at normal operation temperatures over 150°C (302° F).
- (3) "Special" tolerances - i.e., tolerances closer than grade ABEC-5 (or national equivalents).

II. EXEMPT BEARING BALLS

List I item 1601 (c) (1) contains an exemption for "low quality" and "cycle quality" bearing balls made of "normal" chrome steel. For purposes of that exemption, the following definitions apply:

- (1) "Normal" chrome steel means standard chrome steel containing:
  - (a) not more than 1 percent of carbon,
  - (b) not more than 1.65 percent of chrome, and
  - (c) no other alloying elements except those present as impurities or in such low quantities as not to modify the basic characteristics of the alloy.
- (2) "Low quality" balls means bearing balls with tolerances no closer than those in the table below (or any comparable "DIN" standards):

(This revision affects Part II. See ACEP PD No. 1101 (Rev. 1) Am. 20.)

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	Ball Sizes		
	Under 3/4 mm. (Under 1 11/32") (a)	3/4 mm. to 76 mm. (1 11/32" to 3") (b)	76 mm. & over (3" and over) (c)
1. Sphericity	$\pm 0.00508$ mm. — (0.0002")	$\pm 0.0127$ mm. — (0.0005")	
2. Variation per Carton			
3. Variation per Shipment	$\pm 0.0127$ mm. — (0.0005")	$\pm 0.0254$ mm. — (0.001")	$\pm 0.0508$ mm. — (0.002")

(3) "Cycle quality" balls means bearing balls of a diameter 1/8 inch (3.175 mm) to 1/4 inch (6.35 mm), to tolerances not better than  $\pm 0.00016$  inch (0.004 mm) per carton.



C O N F I D E N T I A L

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## LIST ANNEX B (contd.)

## Interpretative Note No. 2 (Revised) (contd.)

II. EXEMPT BEARINGS BALLS

List I item 1601 (b) (1) contains an exemption for "low-quality" bearing balls made of "normal" chrome steel. For purposes of that exemption, the following definitions apply:

1. "Normal" chrome steel means standard chrome steel containing

(a) not more than 1 per cent of carbon,

(b) not more than 1.65 per cent of chrome, and

(c) no other alloying elements except those present as impurities or in such low quantities as not to modify the basic characteristics of the alloy.

2. "Low-quality" balls means bearing balls with tolerances no closer than those in the table below:

	Ball Sizes		
	Under 34 mm. (Under 1 11/32") (a)	34 mm. to 76 mm. (1 11/32" to 3") (b)	76 mm. & over (3" and over) (c)
1. Sphericity	±0.00508 mm. (0.0002")		±0.0127 mm. (0.0005")
2. Variation per Carton			
3. Variation per Shipment	±0.0127 mm. (0.0005")	±0.0254 mm. (0.001")	±0.0508 mm. (0.002")

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## LIST ANNEX B (contd.)

## Interpretative Note No. 2 (Revised) (contd.)

III. "SPECIAL" BEARINGS - DESCRIPTION

"Special" bearings: All ball and roller (including needle) bearings having any of the following special characteristics:

(1) "Special" materials - i.e., as follows:

- (a) Rings, balls, rollers, or pins made from any steel alloy or other material except the following: low-carbon steel; SAE-52100 high carbon chromium steel; SAE-4615 nickel-molybdenum steel; or national equivalents. (Partial illustrative examples of "special" materials for this purpose are: high-speed tool steels; stainless steels; monel; beryllium).
- (b) Retainers and separators made from any material except pressings, stampings, or machinings of the following metals: mild steel; brass or bronze; ferritic malleable cast iron. (Partial illustrative examples of "special" materials for this purpose are: plastics; impregnated materials; cast iron other than ferritic malleable type).

(2) "Special" heat treatment - i.e. processed by special heat treatment for the purpose of stabilizing the bearings for use at normal operation temperatures over 150°C. (302°F)(3) "Special" tolerances - i.e. having dimensioned tolerances or running accuracies higher than those classified as "normal" (or "standard") under International Standards Organisation standards or under equivalent national standards (e.g. American Standards Association "Grade I"; British Standards Institute "292"; German Standards Institute "DIN-620"; and Italian Standards Institute "UNI 654-657").(4) "Special" internal fit-up - i.e. having internal clearances differing from those classified as "normal" or "standard" by the International Standards Organisation or under equivalent national standards (subject to such exceptions as may be determined for specific types and sizes).(5) "Special" operating characteristics - i.e. having "smooth running", "quiet running", "low torque" or other special operating characteristics requiring special inspections.(6) "Special" design or configuration - i.e. differing in design or configuration from the types set out in the table overleaf.



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## Interpretative Note No. 3

Molybdenum Compounds

The following is an illustrative list of molybdenum compounds containing more than 35 percent molybdenum, covered by part (d) of item 1658.

Name	Formula	Content	
		Mo	%
Ferromolybdenum 1/	$\text{Fe}_3\text{Mo}$		36
Molybdenite 2/	$\text{S}_2 \text{ Mo}$		60
Molybdic Anhydride	$\text{Mo O}_3$		67
Molybdenum Chloride	$\text{Cl}_3 \text{ Mo}$		47
Calcium Molybdate	$\text{Mo O}_4\text{Ca}$	over	35
Molybdenum Silicide	$\underline{3/}$		60
Molybdenum Hexafluoride	$\text{F}_6 \text{ Mo}$		46
Molybdenum Oxychloride	$\text{MoO}_2 \text{ Cl}_2$		48
Molybdenum Oxyfluoride	$\text{MoO}_2 \text{ F}_2$		57
Molybdenum Trisulphide	$\text{S}_3 \text{ Mo}$		50
Molybdenum Bioxyde	$\text{Mo O}_2$		75
Molybdenum Hydroxyde	$\text{Mo (OH)}_3$		64
Molybdic Acid	$\text{Mo O}_4\text{H}_2$	over	35
Molybdenum Carbonyl	$\text{Mo (CO)}_6$		36
Sodium Molybdate	$\text{Mo O}_4 \text{ Na}_2$	over	35
Potassium Molybdate	$\text{Mo O}_4\text{K}_2$	over	35
Ammonium Molybdate	$\text{Mo O}_4(\text{NH}_4)_2$	over	35
Trimolybdates	$\text{Mo O}_3 \text{ R}^2 \text{ O}$	over 35 if atomic weight of the element R is 60 or less	

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Name	Formula	Content	
		Mo	%
Molybdenum Chloride	$\text{Cl}_2 \text{ Mo}$		57
Molybdenum Bromide	$\text{Br}_2 \text{ Mo}$		37
Molybdenum Oxychloride	$\text{MoO Cl}$		65
Molybdenum Sesquioxys	$\text{Mo}_2\text{O}_3$	over	35
Molybdenum Sesquisulfide	$\text{Mo}_2\text{S}_3$	over	35
Methyl Molybdate	$\text{Mo O}_4(\text{CH}_3)_2$	over	35
Magnesium Molybdate	$\text{Mo O}_4 \text{ Mg}$	over	35
Paramolybdates	$7\text{Mo O}_3 3\text{R}_2\text{O}$	over 35 if atomic weight of the element R is 145 or less	
Paramolybdates	$12\text{Mo O}_3 3\text{R}_2\text{O}$	over 35 if atomic weight of the element R is 250 or less	

- 1/ Covered also by part (c) of item 1658.
- 2/ Covered also by part (a) of item 1658.
- 3/ An alloying powder containing: Molybdenum 60 percent, Silicon 30 percent, Iron 10 percent.

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INTERPRETATIVE NOTE NO. 4

Equipment for the Production of Military Explosives  
Specialized Components

The following is a list of key specialized components used in the manufacture of military explosives, as covered by item 1118(b):

- A. Dehydration presses.
- B. Extrusion presses for the extrusion of small arms, cannon and rocket propellants.
- C. Cutting machines for the sizing of extruded propellants.
- D. Sweetie barrels (tumblers) 6 feet and over in diameter and having over 500 pounds product capacity.

NOTE: For an explanation of the above definitions, see Document No. 1811.18/1.

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## INTERPRETATIVE NOTE NO. 5

VESSELS - INCORPORATION OF GYROSCOPIC EQUIPMENT (Item 1485)

The following types of gyro-compasses (sub-item 1485(a)) for navigational purposes only and the requisite associated navigational repeaters (sub-item 1485(d)), when installed in new vessels or left in second-hand vessels, do not subject the vessels to embargo under sub-items 1416 (f) or 1417 (d) (8):

<u>Type</u>	<u>Model</u>
1. Admiralty	1005
2. Admiralty	1015
3. Anschutz	III-T
4. Anschutz	IV-T
5. Brown	A
6. Brown	B
7. Hokushin	A
8. Hokushin	B
9. Plath	KK51
10. Plath	KrK54
11. Sperry	Mark 14
12. Sperry	Minor (Mark E.I.)

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Approved For Release 2001/03/16 : CIA-RDP64-00014A000100100001-0 *not page 17 of 80 added*

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